Lepidico Chemicals Namibia (Pty) Ltd

Final Environmental Social Management Plan (ESMP) Report for the Karibib Project, Mining License (ML) No. 204, Karibib District, Erongo Region, **WEST-CENTRAL NAMIBIA**

JULY 2020

Lepidico Chemicals Namibia (Pty) Ltd
P. O. Box 90898
Klein Windhoek
WINDHOEK, NAMIBIA

PROPONENT, LISTED ACTIVITIES AND RELATED INFORMATION SUMMARY

TYPE OF AUTHORISATIONS

Renewal and Transfer of Environmental Clearance Certificate (ECC)

MINISTRY OF ENVIRONMENT, FORESTRY AND TOURISM (MEFT)

ECC APPLICATION REFERENCE No.

APP-001552

NAME AND ADDRESS OF THE PROPONENT

Lepidico Chemicals Namibia (Pty) Ltd
(80% Owned by Lepidico Limited)

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COMPETENT AUTHORITY

Ministry of Mines and Energy (MME)

PROPOSED PROJECT

Renewal and Transfer of ECC for Mining License (ML) No. 204, Karibib Project
Karibib District, Erongo Region, Namibia

PROJECT LOCATION

Karibib District, Erongo Region, West Central Namibia
Latitude: -22.102132, Longitude: 15.998186

ENVIRONMENTAL CONSULTANTS

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ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

Dr Sindila Mwiya
PhD, PG Cert, MPhil, BEng (Hons), Pr Eng

Summary Profile and Qualification of the Environmental Assessment Practitioner (EAP) / International Consultant Projects Director – Dr Sindila Mwiya

Dr Sindila Mwiya has more than eighteen (18) years of practical field-based technical industry experience in Environmental Assessment (SEA, EIA, EMP, EMS), Energy (Renewable and Non-renewable energy sources), onshore and offshore resources (minerals, oil, gas and water) exploration / prospecting, operation and utilisation, covering general and specialist technical exploration and recovery support, Health, Safety and Environment (HSE) permitting for Geophysical Surveys such as 2D, 3D and 4D Seismic, Gravity and Electromagnetic Surveys for mining and petroleum (oil and gas) operations support, through to engineering planning, layout, designing, logistical support, recovery, production / operations, compliance monitoring, rehabilitation, closure and aftercare projects lifecycles. The great array of highly technical specialist knowledge and field-based practical experiences of Dr Sindila Mwiya has now been extended to supporting the development of Environmentally Sustainable, automated / smart and Climate Change resilient homes, towns and cities.

Through his companies, Risk-Based Solutions (RBS) CC and Foresight Group Namibia (FGN) (Pty) Ltd which he founded, he has undertaken more than 200 projects for Local (Namibian), Continental (Africa) and International (Global) based clients. He has worked and continues to work for Global, Continental and Namibian based reputable resources (petroleum and mining / minerals) and energy companies such as EMGS (UK/ Norway), CGG (UK/ France/Namibia), BW Offshore (Norway/Singapore /Namibia), Shell Namibia B. V. Limited (Namibia/ the Netherlands), Tullow Oil (UK/Namibia), Debmarine (DBMN) (Namibia), Reconnaissance Energy Africa Ltd (ReconAfrica) (UK/Canada/Namibia), Osino Resource Corporation (Canada/Germany/Namibia), Desert Lion Energy Corporation (Canada/ Australia/ Namibia), Petrobras Oil and Gas (Brazil) / BP (UK)/ Namibia, REPSOL (Spain/ Namibia), ACREP (Namibia/Angola), Preview Energy Resources (UK), HRT Africa (Brazil / USA/ Namibia), Chariot Oil and Gas Exploration (UK/ Namibia), NABIRM (USA/ Namibia), Serica Energy (UK/ Namibia), Eco (Atlantic) Oil and Gas (Canada / USA/ Namibia), ION GeoVentures (USA), PGS UK Exploration (UK), TGS-Nopec (UK), Maurel & Prom (France/ Namibia), GeoPartners (UK), PetroSA Equatorial Guinea (South Africa / Equatorial Guinea/ Namibia), Preview Energy Resources (Namibia / UK), Sintezneftegaz Namibia Ltd (Russia/ Namibia), INA Namibia (INA INDUSTRIJA NAFTE d.d) (Croatia/ Namibia), Namibia Underwater Technologies (NUTAM) (South Africa/Namibia), InnoSun Holdings (Pty) Ltd and all its subsidiary renewable energy companies and projects in Namibia (Namibia / France), HopSol (Namibia/Switzerland), Momentous Solar One (Pty) Ltd (Namibia / Canada), OLC Northern Sun Energy (Pty) Ltd (Namibia) and more than 100 local companies. Dr Sindila Mwiya is highly qualified with extensive practical field-based experience in petroleum, mining, renewable energy (Solar, Wind, Biomass, Geothermal and Hydropower), Non Renewable energy (Coal, Petroleum, and Natural Gas), applied environmental assessment, management and monitoring (Scoping, EIA, EMP, EMS) and overall industry specific HSE, cleaner production programmes, Geoenvironmental, geological and geotechnical engineering specialist fields.

Dr Sindila Mwiya has undertaken and continues to undertake and manage high value projects on behalf of global and local resources and energy companies. Currently, (2020-2023) Dr Sindila Mwiya is responsible for permitting planning through to operational and completion compliance monitoring, HSE and engineering technical support for multiple major upstream onshore and offshore petroleum, minerals and mining projects, Solar and Wind Energy Projects, manufacturing and environmentally sustainable, automated / smart and Climate Change resilient homes developments in different parts of the World including Namibia. Currently, Dr Sindila Mwiya is developing a 16 Ha commercial and residential Mwale Mwiya Park in the Town of Katima Mulilo, Zambezi Region, Namibia as one of first advanced Environmentally Sustainable, automated / smart and Climate Change resilient development in Namibia. He continues to work as an International Resources Consultant, national Environmental Assessment Practitioner (EAP) / Environmentally Sustainable, automated / smart and Climate Change resilient homes developer, Engineering / Technical Consultant (RBS / FGN), Project Manager, Programme Advisor for the Department of Natural and Applied Sciences, Namibia University of Science and Technology (NUST) and has worked as a Lecturer, University of Namibia (UNAM), External Examiner/ Moderator, NUST, National (Namibia) Technical Advisor (Directorate of Environmental Affairs, Ministry of Environment, Forestry and Tourism (MEFT) / DANIDA – Cleaner Production Component) and Chief Geologist for Engineering and Environment Division, Geological Survey of Namibia, Ministry of Mines and Energy and a Field-Based Geotechnician (Specialised in Magnetics, Seismic, Gravity and Electromagnetics Exploration and Survey Methods) under the Federal Institute for Geoscience and Natural Resources (BGR) German Mineral Exploration Promotion Project to Namibia, Geophysics Division, Geological Survey of Namibia, Ministry of Mines and Energy.

He has supervised and continues to support a number of MScs and PhDs research programmes and has been a reviewer on international, national and regional researches, plans, programmes and projects with the objective to ensure substantial local skills development, pivotal to the national socioeconomic development through the promotion of sustainable natural resources coexistence, management, development, recovery, utilisation and for development policies, plans, programmes and projects financed by governments, private investors and donor organisations. From 2006 until 2017, he has provided extensive technical support to the Department of Environmental Affairs (DEA), Ministry of Environment, Forestry and Tourism (MEFT) through GIZ in the preparation and amendments of the Namibian Environmental Management Act, 2007, (Act No. 7 of 2007), new Strategic Environmental Assessment (SEA) Regulations, preparation of the updated Environmental Impact Assessment (EIA) Regulations as well as the preparation of the new SEA and EIA Guidelines and Procedures all aimed at promoting effective environmental assessment and management practices in Namibia.

Among his academic achievements, Dr Sindila Mwiya is a holder of a PhD (Engineering Geology/Geotechnical / Geoenvironmental / Environmental Engineering and Artificial Intelligence) – Research Thesis: Development of a Knowledge-Based System Methodology (KBSM) for the Design of Solid Waste Disposal Sites in Arid and Semiarid Environments, MPhil/PG Cert and BEng (Hons) (Engineering Geology and Geotechnics) qualifications from the University of Portsmouth, School of Earth and Environmental Sciences, United Kingdom. During the 2004 Namibia National Science Awards, organised by the Namibian Ministry of Education, and held in Windhoek, Dr Sindila Mwiya was awarded the Geologist of the Year for 2004, in the professional category. Furthermore, as part of his professional career recognition, Dr Sindila Mwiya is a life member of the Geological Society of Namibia, Consulting member of the Hydrogeological Society of Namibia and a Professional Engineer registered with the Engineering Council of Namibia.

Windhoek, Namibia July 2020

MAIN SPECIALIST CONSULTANTS / SPECIALIST MANAGERS

1. **Dr Sindila Mwiya** – ESIA Projects Director / EAP – 2017 and 2020

2. **Dr Vita Stankevica** – Socioeconomic Specialist and Quality Control 2017 and 2020

3. **Mr Gift Kamupingene**, representing GiG Agri-Advice & Supplies CC - Socioeconomic Baseline Report – 2020

4. **Dr Peter Cunningham** - Flora and Fauna Specialist 2017 and 2020

5. **Namib Hydrosearch –** Specialist Report on Hydrogeological Baseline Assessment and Groundwater Exploration -2017

6. **Dr S. Onjefu** and **Ms N. Hamatui**- Air Quality and Noise Impact Assessment - 2017

7. **Dr I Maposa** – Modelling Air Quality and Noise for Future Trends -2017

8. **Dr John Kinahan** - Archaeological Assessment - 2017

9. **Ms Meriam Kauyama and Ms. Christine Links** (Administrative Consultants) Public consultation support and logistics -2017 and 2020

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EXECUTIVE SUMMARY

1. Introduction

Lepidico Chemicals Namibia (Pty) Ltd ("**Proponent**") holds mineral rights for the Karibib Project under the Mining License (ML) No. 204, situated in the Karibib District, Erongo Region, west-central Namibia. The Proponent is 80% owned by Lepidico Limited ("Lepidico"), a lithium exploration and development company listed on the Australian Securities Exchange and 20% owned by Huni Urib Holding Company, a local shareholder.

The ML 204 covering a total area of 6,930Ha was granted by the Ministry of Mines and Energy ("Component Authority") on the 19th June 2018 and will expire on the 18th June 2028. The Karibib Project covering the ML 204 comprises the Rubicon and Helikon 1-5 mining sites. The Rubicon and Helikon areas are well known lithium deposits that have been explored and mined since the 1930s and 1950s respectively. Lepidico has completed the definitive feasibility study for the Karibib Project following the implementation of an in-fill exploration programme. In order to implement the proposed mining operation, the Proponent is required to have undertaken an Environmental Assessment (EA) in support of the application for Environmental Clearance Certificate (ECC) as provided for in National Environmental Management Act, 2007, (Act No. 7 of 2007) and the Environmental Impact Assessment (EIA) Regulation, 2012.

The current ECC was granted by the Environmental Commissioner in the Ministry of Environment and Tourism ("Environmental Regulator") now called the Ministry of Environment, Forestry and Tourism (MEFT) in September 2017 and will expire in September 2020. The current ECC was granted following the completion of the EA process covering the preparation of Scoping, EIA and EMP Reports by Risk-Based Solution ("RBS") CC in 2017. The renewed ECC will need to be transferred from Desert Lion Energy (DLE) (Pty) Ltd (previous Proponent) now renamed Lepidico Chemicals Namibia (Pty) Ltd (current Proponent).

In addition to the compliance to the provisions of the national mining and environmental legislations for the Karibib Project, Lepidico is committed to meeting Good International Industry Practice (GIIP) that defines leading industry best practices as provided for in the Equator Principles (www.equator-principles.com). As such, this Environmental Social Management Plan (ESMP) Report has been prepared based on the findings and recommendations of the Environmental Social Impact Assessment (ESIA) Report. Both the ESIA and this ESMP Report have been prepared in order to support the application for renewal and transfer of the Environmental Clearance Certificate (ECC).

All the mitigation measures for proposed project activities with significant impacts on the receiving environment as detailed in the ESIA report are presented in this ESMP Report.

2. The ESMP Provisions

The Environmental Social Management Plan (ESMP), described in this report, is based on the findings and recommendations as detailed in the ESIA. Lepidico Chemicals Namibia (Pty) Ltd shall incorporate the ESMP provisions in the Environmental Management System (EMS) of the company in line with the Environmental Policy of the company, GIIP, the Equator Principles and International Finance Corporation (IFC) environmental management guidelines and frameworks.

This ESMP report incorporates the provisions of the national legislations, regulations and guidelines inclusive of the Minerals (Prospecting and Mining) Act (No. 33 of 1992), Environmental Impact Assessment Regulations (2012) and the Environmental Management Act, 2007, (Act No. 7 of 2007) as well as all the key applicable legislative provisions as outlined in the ESIA Report (Chapter 3) and Annex 2 to the ESIA- Legal register.

3. Summary of the ESMP

Based on the assessment of potential material impacts undertaken for the proposed Karibib Project as well as all the supporting infrastructures such as roads, powerline and water supply within the ML 204,

a number of positive and negative impacts have been identified. Mitigation measures for minimising the influence of the negative impacts have been proposed and management strategies are provided in this ESMP covering the following Karibib Project lifecycle developmental stages:

(i) Preconstruction.

(ii) Construction.

(iii) Operation, ongoing exploration, monitoring and rehabilitation, and.

(iv) Decommissioning, closure and aftercare.

Overall, it is hereby recommended that the proposed Karibib Project mining, minerals processing, and ongoing exploration operations in the ML 204 with all the supporting infrastructure be issued with an Environmental Clearance Certificate (ECC) with the following key conditions:

(i) The Proponent will undertake to implement the conditions of the land lease agreement to be concluded with the owner of Farm Okongava 72, the Ministry of Agriculture, Water and Land Reform, for the portion of the farm required to support the proposed Karibib Project.

(ii) The proponent shall implement and adhere to all the provisions of this ESMP report.

(iii) Mitigation measures shall be implemented as detailed in this ESMP report.

(iv) The Proponent shall adhere to all the applicable national regulations and standards as well as Good International Industry Practice (GIIP) that defines leading industry best practices as provided for in the Equator Principles and International Finance Corporation (IFC) environmental management guidelines and frameworks, and.

(v) The Proponent shall adopt the precautionary approach / principles in instances where baseline information, national or international guidelines or mitigation measures have not been provided or do not sufficiently address the site-specific project impact.

4. Proponent Roles and Responsibilities

The following are the recommended actions (roles and responsibility) to be implemented by the Proponent as a part of the management of the impacts through implementations of this ESMP Report:

(i) Appoint an Environmental Control Officer to lead and further develop, implement and promote environmental culture through awareness raising of the workforce, contractors and sub-contractors in the field during the whole duration of the proposed project.

(ii) Provide with other support, human and financial resources, for the implementation of the proposed mitigations and effective environmental management during the planned mine project life cycle.

(iii) Develop a simplified environmental induction and awareness programme for all the workforce, contractors and sub-contractors.

(iv) Where contracted service providers are likely to cause environmental impacts, these will need to identified and contract agreements need to be developed with costing provisions for environmental liabilities.

(v) Implement internal and external monitoring of the actions and management strategies developed during the project duration and a final Environmental Monitoring report to be prepared by the Environmental Control Officer and to be submitted to the regulators and to end the proposed mine project, and.

(vi) Develop and implement a monitoring programme that will fit into the overall company's Environmental Management Systems (EMS) as well as for any future ESIA related to the expansion of the current delineated resources or development of completely new mine site within the ML 204 area.

All the responsibilities to ensure that the recommendations are executed accordingly, rest with the **Lepidico Chemicals Namibia (Pty) Ltd.** The Proponent shall provide all appropriate resource requirements for the implementation of this ESMP as well as an independently managed (not directly controlled by the mining company) funding instrument for mine closure and aftercare environmental liabilities as detailed in Annex 1.

It is the responsibility of the Proponent to make sure that all members of the workforce including contractors and subcontractors are aware of this ESMP provisions and its objectives. It is hereby recommended that the Proponent take all the necessary steps to implement all the recommendations of this ESMP for the successful execution of the preconstruction, construction, operational, decommissioning, closure and aftercare activities of the proposed Karibib Project in the ML 204.

1. PROJECT BACKGROUND

1.1 Introduction

Lepidico Chemicals Namibia (Pty) Ltd ("**Proponent**") holds mineral rights for the Karibib Project under the Mining License (ML) No. 204, situated in the Karibib District, Erongo Region, west-central Namibia (Fig. 1.1). The ML 204 covering a total area of 6,930 Ha was granted by the Ministry of Mines and Energy ("**Component Authority**") on the 19th June 2018 and will expire on the 18th June 2028. The ML 204 is granted for base and rare metals, industrial minerals, precious metals, precious stones and semi-precious stones.

1.2 Lepidico Chemicals Namibia (Pty) Ltd

The Proponent is 80% owned by Lepidico Limited ("**Lepidico**"), a lithium exploration and development company focused on unlocking the value of hard rock lithium-rich mica deposits, and 20% owned by Huni Urib Holding Company. Lepidico is listed on the Australian Securities Exchange and 100% owner and developer of the L-Max® process technology and has the exclusive rights to the LOH-Max® technology, proprietary processes which have the potential to commercially extract lithium chemicals and other valuable by-products from unconventional lithium mica and phosphate mineral sources.

1.3 National Legislation and Good International Industry Practice (GIIP)

1.3.1 Environment Clearance Requirements (ECC)

The national legislation governing minerals prospecting and mining activities in Namibia fall within the jurisdiction of the Competent Authority (Ministry of Mines and Energy (MME)) responsible for granting authorisations in form of Mining Claims (MCs), Reconnaissance Licenses, Exclusive Prospecting Licences (EPLs) and Mining Licenses (MLs). The Minerals (Prospecting and Mining) Act (No 33 of 1992) is the most important legal instrument governing minerals prospecting and mining activities in Namibia.

The proposed mining, minerals processing and ongoing exploration activities in the ML No. 204 are listed in the Environmental Management Act, 2007, (Act No. 7 of 2007) and the Environmental Impact Assessment (EIA) Regulation, 2012 as among the activities with the potential to cause significant negative impact on the receiving physical, biological and socioeconomic environments. All listed activities cannot be undertaken without an Environmental Clearance Certificate (ECC). In order to obtain an ECC, the Proponent is required to have undertaken an Environmental Assessment (EA) comprising Environmental Scoping, Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP) for the proposed listed activities. The Environmental Assessment process shall be undertaken in accordance with the provisions of the Environmental Impact Assessment Regulations, 2012 and the Environmental Management Act, 2007, (Act No. 7 of 2007). In fulfilment of the environmental requirements, the Proponent appointed Risk-Based Solutions (RBS) CC as the Environmental Consultant led by Dr Sindila Mwiya as the Environmental Assessment Practitioner (EAP) to prepare the EIA and EMP Reports as provided for the national legislation in order to support the application for Environmental Clearance Certificate (ECC) for the listed activities.

The Proponent is hereby applying for the renewal and transfer of the Environmental Clearance Certificate (ECC) as shown in Fig. 1.1. The ECC was granted by the Environmental Commissioner in the Ministry of Environment and Tourism ("**Environmental Regulator**") now called the Ministry of Environment, Forestry and Tourism (MEFT) in September 2017 and will expire in September 2020. The renewed ECC will need to be transferred from Desert Lion Energy (DLE) (Pty) Ltd (previous Proponent) now renamed Lepidico Chemicals Namibia (Pty) Ltd (current Proponent). The current ECC was granted following the completion of an Environmental Assessment (EA) process covering the preparation of Scoping, EIA and EMP Reports by Risk-Based Solution ("RBS") CC in 2017. In accordance with the provisions of the national legislation, the applications for renewal and transfer of the current ECC for the Karibib Project requires the Proponent to submit to the Environmental Commissioner the updated EIA and EMP Reports together with the completed ECC applications for transfer and renewal.

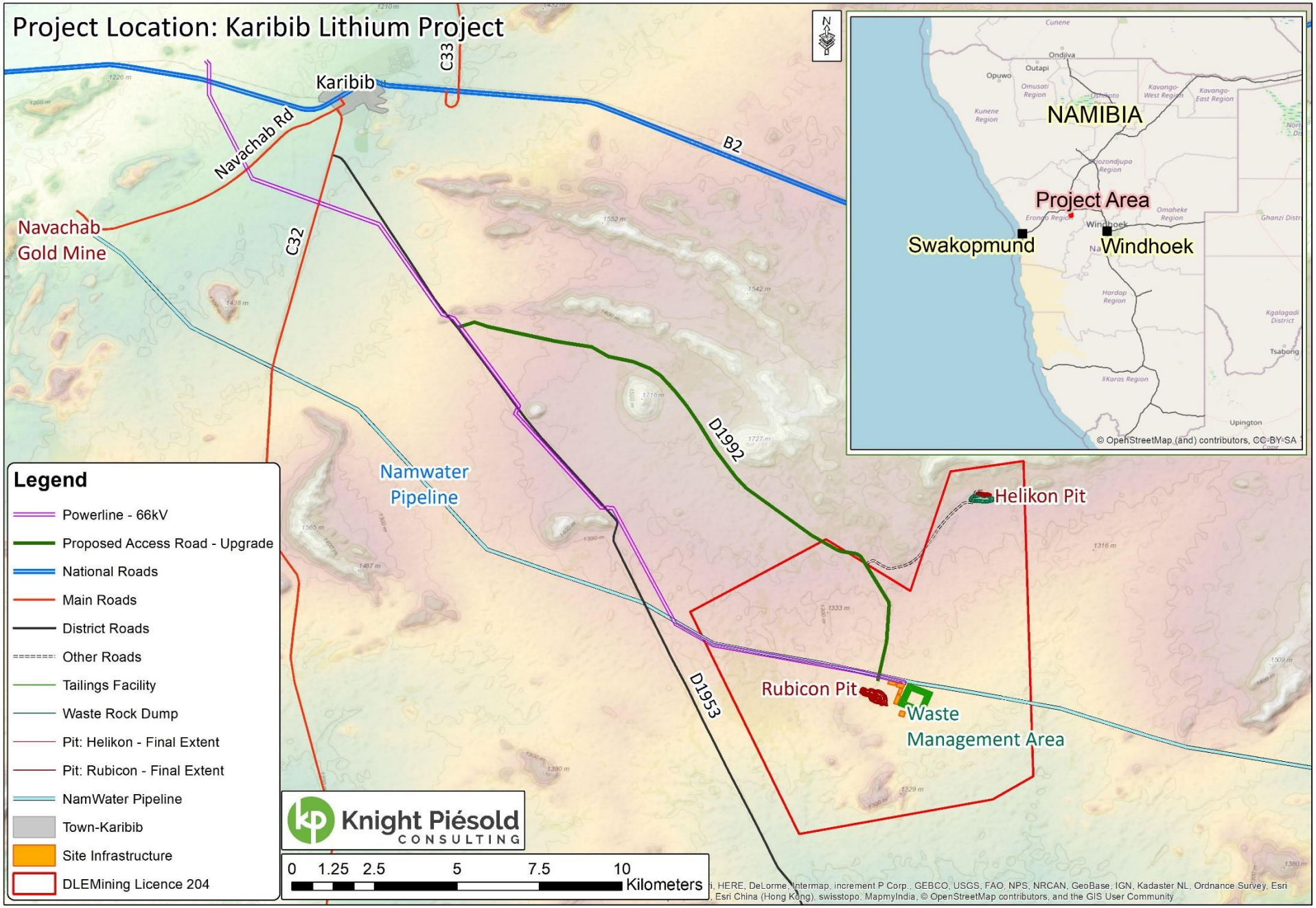

Figure 1.1: Location of the Karibib Project (Source: Knight Piésold, 2020).

REPUBLIC OF NAMIBIA

MINISTRY OF ENVIRONMENT AND TOURISM

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05 September 2017

OFFICE OF THE ENVIRONMENTAL COMMISSIONER

The Managing Director
Desert Lion Energy (Pty) Ltd
P.O. Box 90898
Klein Windhoek

Dear Sir/Madam

SUBJECT: ENVIRONMENTAL CLEARANCE CERTIFICATE FOR THE PROPOSED MINE DEVELOPMENT COVERING PHASE 1 AND PHASE 2 IN-SITU MINING LICENSE APPLICATION, POWER LINE, ROADS AND WATER SUPPLY AND OTHER SUPPORTING INFRASTRUCTURES IN THE EXCLUSIVE PROSPECTING LICENSE NO.5439, KARIBIB, ERONGO REGION.

Environmental Impact Assessment and Environmental Management Plan submitted are sufficient as these have made an adequate provisions of the environmental management concerning the proposed activities. From this perspective regular environmental monitoring and evaluations on environmental performance should be conducted. Targets for improvements should be established and monitored from time to time.

This Ministry reserves the right to attach further legislative and regulatory conditions during the operational phase of the project. I issue the clearance with the following condition that all applicable permits should be obtained.

On the basis of the above, this letter serves as an environmental clearance certificate for the project to commence. However, this clearance letter does not in any way hold the Ministry of Environment and Tourism accountable for misleading information, nor any adverse effects that may arise from this project's activities. Instead, full accountability rests with Desert Lion Energy (Pty) Ltd and their consultant.

This environmental clearance is valid for a period of 3 (three) years, from the date of issue unless withdrawn by this office.

Yours sincerely,

MINISTRY OF ENVIRONMENT AND TOURISM P/Bag 13306 Windhoek, Namibia 2017 -09- 08 Office of the Environmental Commissioner

Teofilus Nghitila
ENVIRONMENTAL COMMISSIONER

"Stop the poaching of our rhinos"

All official correspondence must be addressed to the Permanent Secretary

Figure 1.2: Copy of the ECC granted in September 2017 and will expire in September 2020. The ECC was granted to Desert Lion Energy (Pty) Ltd (previous Proponent) renamed to Lepidico Chemicals Namibia (Pty) Ltd (current Proponent) hence the renewed ECC will also need to be transferred from Desert Lion Energy (Pty) Ltd to Lepidico Chemicals Namibia (Pty) Ltd.

1.3.2 Good International Industry Practice (GIIP)

In addition to the compliance to the provisions of the national mining and environmental legislations for the Karibib Project, Lepidico is committed to meeting Good International Industry Practice (GIIP) that defines leading industry best practices as provided for in the Equator Principles (www.equator-principles.com).

According to the Equator Principles ("**EPs**") document effective July 2020 (www.equator-principles.com) the EPs are a risk management framework, voluntarily adopted by Equator Principles Financial Institution (EPFI) for determining, assessing and managing environmental and social risk in projects and is primarily intended to provide a minimum standard for due diligence and monitoring to support responsible risk decision-making. The EPs are intended to serve as a common baseline and framework for EPFI to identify, assess and manage environmental and social risks when financing Projects. The EPs have greatly increased the attention and focus on social/community standards and responsibility, including robust standards for indigenous peoples, labour standards and consultation with locally affected communities (www.equator-principles.com).

In accordance with Equator Principle 1: Review and Categorisation and International Finance Corporation's (IFC) environmental and social categorisation process, the Karibib Project has the magnitude of potential environmental and social risks and impacts, including those related to biodiversity, to be classified as either category A or B defined as follows:

- Category A – Projects with potential significant adverse environmental and social risks and/or impacts that are diverse, irreversible or unprecedented, and.

- Category B – Projects with potential limited adverse environmental and social risks and/or impacts that are few in number, generally site-specific, largely reversible and readily addressed through mitigation measures.

Based on the outcomes of the previous environmental assessment process that was conducted in 2017 coupled with the more recent work undertaken for this ESMP and ESIA, the Karibib Project can be classified as a Category B Project. This classification has however been reviewed based on the outcomes of the current process of updating the current environmental reports in support of the application for the renewal and transfer of the current ECC. There can be a range in the scale of potential environmental and social risks and impacts within Projects classified as Category B. In general terms, higher risk Category B Projects will be treated similarly to Category A Projects, and lower risk Category B Projects could be treated in a lighter regime. The EPFI that may finance the Karibib Project shall, at their own discretion, determine the appropriate level of Assessment Documentation, review, and/or monitoring required to address these risks and impacts in accordance with the EPs 1-10. The required Assessment Documentation shall be adequate, accurate and objective evaluation and presentation of the environmental and social risks and impacts, whether prepared by the client, consultants or external experts.

In accordance with Equator Principle 2: Environmental and Social Assessment, a Category A and, as appropriate, Category B Projects, the Assessment Documentation shall include an Environmental and Social Impact Assessment (ESIA) and Environmental Social Management Plan (ESMP). One or more specialised studies may also need to be undertaken. For other Category B and potentially C Projects, a limited or focused environmental or social assessment may be appropriate, applying applicable risk management standards relevant to the risks or impacts identified during the categorisation process.

In making a clear distinction with respect to the use of terminologies in this environmental assessment process, the term EIA is used to define the national (Namibian) EIA process, and the terms ESIA and ESMP are used when referring to the adoption of internationally compliant environmental and social assessments in line with the GIIP.

Therefore, this ESMP Report has been prepared by Risk-Based Solution (RBS) CC in support of the Environmental Assessment Process to update the previous EIA and EMP Reports to ESIA and ESMP Reports in support of the applications for renewal and transfer of the ECC and in compliant with both

national legislation and Good International Industry Practice (GIIP) such as the EPs and IFC environmental management guidelines and frameworks.

1.3.3 Project Screening and Categorisation

The implementation of the ESIA and ESMP process leading to the preparation of this ESMP Report is built on the EIA and EMP process that was undertaken in 2017 and 2020. The ESIA and ESMP process commenced with the screening and preparation of the BID / Scoping Report for project registration with the MEFT. The project screening outcomes clearly established that the Karibib Project activities are listed in the national legislation, the Environmental Management Act, 2007, (Act No. 7 of 2007) and the Environmental Impact Assessment (EIA) Regulation, 2012.

The listing of these activities means that the Karibib Project requires an ECC which can only be obtained by undertaking an EA covering EIA and EMP process. Additionally, the proposed Karibib Project has also been screened against the EPs. Under the EPs, the Karibib Project has been determined to fall under Category B and requiring ESIA and ESMP Reports to be prepared as part of the Assessment Documentations.

1.3.4 Conformance and Commitments Register (CR)

The preparation of this ESMP Report for the Karibib Project conforms to the requirements of both the national legislations and GIIP such as the EPs and IFC environmental management guidelines and frameworks. Conformance with the potential GIIP requirements that will finance the Karibib Project is an ongoing effort to be undertaken throughout the lifecycle of the proposed project.

The Proponent has demonstrated its commitment to conforming with both the national regulatory framework and GIIP through the implementation of the EA covering the BID/ Scoping, the ESIA and this ESMP. During the implementation of the Karibib Project, the Proponent will be required to implement the mitigation measures contained in this ESMP as well as monitoring of the environmental performances to be supported by internal and external environmental audits. Conformance to both national and GIIP such as the EPs shall be demonstrated through evidence presented at each environmental audit event that may be undertaken throughout the lifecycle of the proposed Karibib Project.

1.4 History of the Project

According to Diehl, (1992), exploration of the pegmatite, mainly for beryl, started in 1930 and since 1951, Rubicon has been selectively mined for petalite, amblygonite, lepidolite, beryl, quartz and accessory pollucite and bismuth as well as the oxidation products of the latter. The lithium orebodies within the Erongo Region are believed to be one of the most extensive pegmatite field in the World first mined in the 1950s by a German mining company, Kloechner. Within the general ML 204 area, there are three known historic mining sites, respectively. Rubicon, Helikon and Otjua.

The previous minerals rights holders of the Rubicon Lithium mine, mined beryl, tantalum, amblygonite, petalite and lepidolite with target head grades of between 1.7% and 3.8% Li_2O. Mining methods applied included a combination of open pit and room-and-pillar stopping to a depth of about c.30 m. The ore was handpicked, sorted and processed to a final concentrate. Material that was either not required or did not meet the exceptionally high in-situ grades was discarded in multiple waste dumps surrounding the mine.

These dumps were the focus of the exploration and mining operations that were undertaken by Desert Lion Energy (Pty) Ltd in 2018 before it was taken over by Lepidico and renamed Lepidico Chemicals Namibia (Pty) Ltd. Lepidico Chemicals Namibia (Pty) Ltd has undertaken further exploration activities and prepared a feasibility report with positive results focusing on mining the in-situ ore linked to the local pegmatites within the ML 204.

1.5 Proposed Karibib Project Summary

1.5.1 Site Description

The Karibib Project falls within the Karibib District with the town of Karibib, which is approximately 27 km northwest of ML being the nearest major town (Fig. 1.3). Swakopmund, the regional centre of the Erongo Region and Walvis Bay the main Port, are situated about 193 km and 236 km along the B2 road and to the west of the Karibib Project area. Namibia's capital city, Windhoek, is located approximately 211 km via the B2 and B1 Roads and falls to the southeast of Project Area (Fig. 1.1).

Locally, the ML 204 falls within the 15,160Ha Farm Okongava Ost No. 72, which is a Government owned Farm purchased in 2014 from a private owner for resettlement purpose of landless Namibians (Figs. 1.3-1.5). Currently, the farm is occupied by few subsistence cattle and small stock farmers from the local area of Otjimbingwe (Figs. 1.4 and 1.5).

The area covered by the ML 204 is not pristine and is dominated by a number of old mine excavations, waste rock and tailings dumps linked to the historical exploration and mining operations dating back to the 1950s when mining started in the area (Fig. 1.6 and Diehl, 1992). The proposed mining and exploration operations within the ML 204 will address some of the current poor state of the local environment that has been abandoned and not been rehabilitated over many years of historical exploration and mining operations (Fig. 1.6).

1.5.2 Current Land Uses

The main key land use of the ML 204 area is agriculture comprising cattle and small stock farming. Minerals exploration and mining operations are well known activities in the area dating back to the 1950s. A number of lodges are found in the general surrounding areas but not necessary within the proposed project boundary, the ML 204.

Bush thickening or encroachment is viewed as an economic problem in the general area but does not seem to be an issue within the proposed project area. The area is not part of the communal conservancy system in Namibia with no protected area nearby the ML area. The minerals license areas cover the only lithium ore deposit in Namibia that has been mined in the past and associated with the Rubicon and Helikon pegmatites swarms found within the ML area.

1.5.3 Supporting Infrastructure and Services

The project area is accessed via the maintained C32 gravel road heading south out of Karibib for 2 km and then joining with the local D1992 gravel road for 6 km before turning into the gated Okongava Ost No. 72 farm where approximately 24km of a series of maintained local farm roads service the project areas of Rubicon and Helikon Mine Sites (Figs. 1.3 -1.5). Rubicon will be the main mining and mineral processing facility supported by all the infrastructure. The ML 204 area is serviced by a local network of historical mining and prospecting roads, some of which may require upgrade for high clearance 4 x 4 vehicles.

The proposed Karibib Project mining and mineral processing and ongoing exploration activities will require the following supporting infrastructures and services to been considered and assessed in the updated ESIA Report with mitigation measures as may be required detailed in this ESMP Report:

1.5.4 Technical Summary

According to Lepidico (2020), the Karibib project under the ML 204 consists of six deposits which have been mined previously for petalite and certain other minerals including tantalite. The deposits are located within an existing Mining License area which is central to a larger area (covered by EPLs) which covers approximately 1,000 km^2 and is prospective for the discovery of additional lithium deposits. In 2019, Lepidico completed an in-fill drilling program for the two larger deposits of Rubicon and Helikon 1.

Ore Reserves at Karibib, Namibia total 6.7 million tonnes grading 0.46% Li_2O, 0.23% rubidium and 320ppm caesium. a 60% conversion from Mineral Resources of 11.24 million tonnes, which highlights the potential for further Ore Reserve expansion. The project is expected to consist of two open pit mines, a mineral concentrator and associated infrastructure (Figs. 1.7 - 1.11).

The following is the technical summary of the proposed Karibib Project and the detailed project description is provided in Chapter 2 of the ESIA Report:

1. Open pit mines will be developed on Rubicon and Helikon 1 deposits only. Mining will be using a modest fleet of relatively small scale conventional diesel-powered mining equipment (Figs. 1.7 – 1.11).

2. Provide 115 direct jobs to benefit Namibians with an estimated additional 805 indirect jobs, contracts, services and associated livelihoods to be created that will support many more Namibian families.

3. Symbiotic co-existence with local farmers and communities.

4. Enhancement of local community infrastructure through roads and water supply.

5. Community support programs developed and focussed on critical resources, health and education, diversity and sustainable micro business development.

6. Staff transport arrangements from Karibib to the mine site will be provided by the Proponent.

7. Karibib based staff accommodation services: Will use existing properties in Karibib.

8. The project will use existing infrastructure including the access road, a haul road from Helikon 1 to Rubicon, the solar powered boreholes field and other minor facilities.

9. The Project will be supplied by a 66kV powerline to be developed by Lepidico Chemicals Namibia (Pty) Ltd and operated by Namibia Power Corporation (NamPower) (Pty) Ltd Power. The voltage will be stepped down to 11kV for use in the process plant. The 66/11kV substation will be located adjacent to the process plant. NamPower expects to supply power sourced from 80% renewable sources by 2025.

10. The ancillary buildings including offices, crib rooms, first aid facilities, workshops and stores will be integrated into the process plant area to minimise impact from construction and vehicle movement.

11. A mineral concentrator will be installed close to the Rubicon pit. The processing facilities will use conventional crushing and grinding with mineral separation by froth flotation. The processing plant general view is shown in Fig. 1.10 with a simplified schematic of the process plant flowsheet shown in Fig. 1.11.

12. The processing rate has been reduced to 330,000 tonnes per annum for approximately four years, then increasing to 540,000 tonnes per annum for a project life (including construction and commissioning) of circa 20 years.

13. The plant tailings will be filtered to a moisture content of circa 15% to recycle process water.

14. The tailings from the process plant will be co-disposed with the waste rock from the Rubicon mining operation in a facility called the Rubicon Waste Management Area (WMA) (Fig. 1.12). This will combine fine material from the plant with coarse waste rock from the mine resulting in a single landform structure which is much more structurally stable than a conventional tailings dam. It also enables progressive rehabilitation of the external walls of the structure and rapid final rehabilitation at project closure.

15. Lepidico Chemicals Namibia (Pty) Ltd adheres to the Equator Principles and International Finance Corporation's Environmental and Social Performance Standards. These are to be reflected in the updated documentation.

16. Lepidico Chemicals Namibia (Pty) Ltd has undertaken socioeconomic studies to develop a Corporate Social Responsibility (CSR) program. These have been incorporated into the documentation such this ESIA, and.

17. Sustainable closure – industry best practice closure plans that will rectify mining and processing legacy issues. The Project will be designed for closure in-line with the Best Practice Guide for Mining in Namibia. The Project Mine Closure Plan has been prepared to be updated annually and is attached to this ESMP Report as Annex 1.

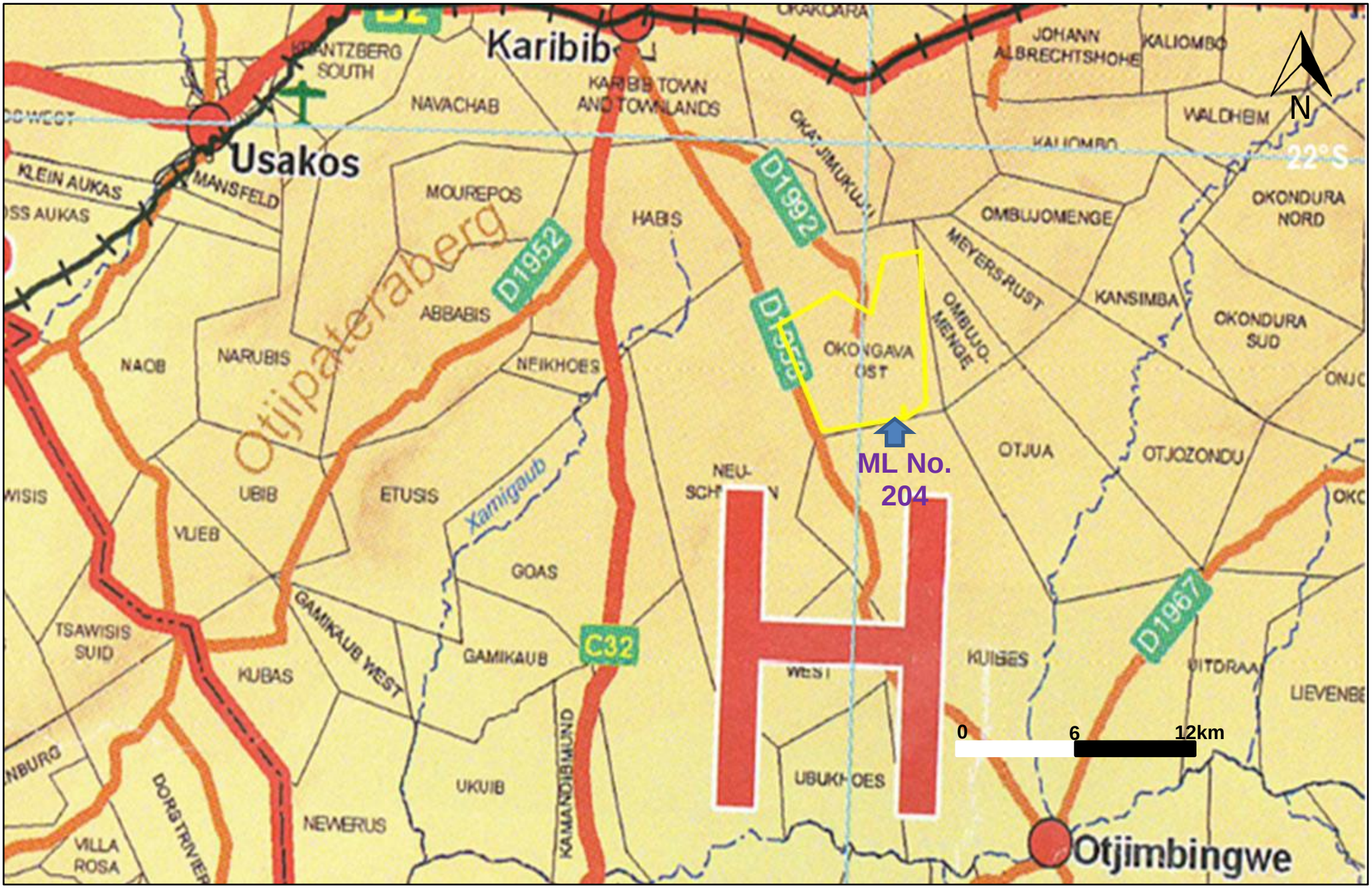


Figure 1.3: Commercial farmland covered by the ML 204 and existing access (Source: Namibia 1:1000000 Registration Divisions Map Extract).

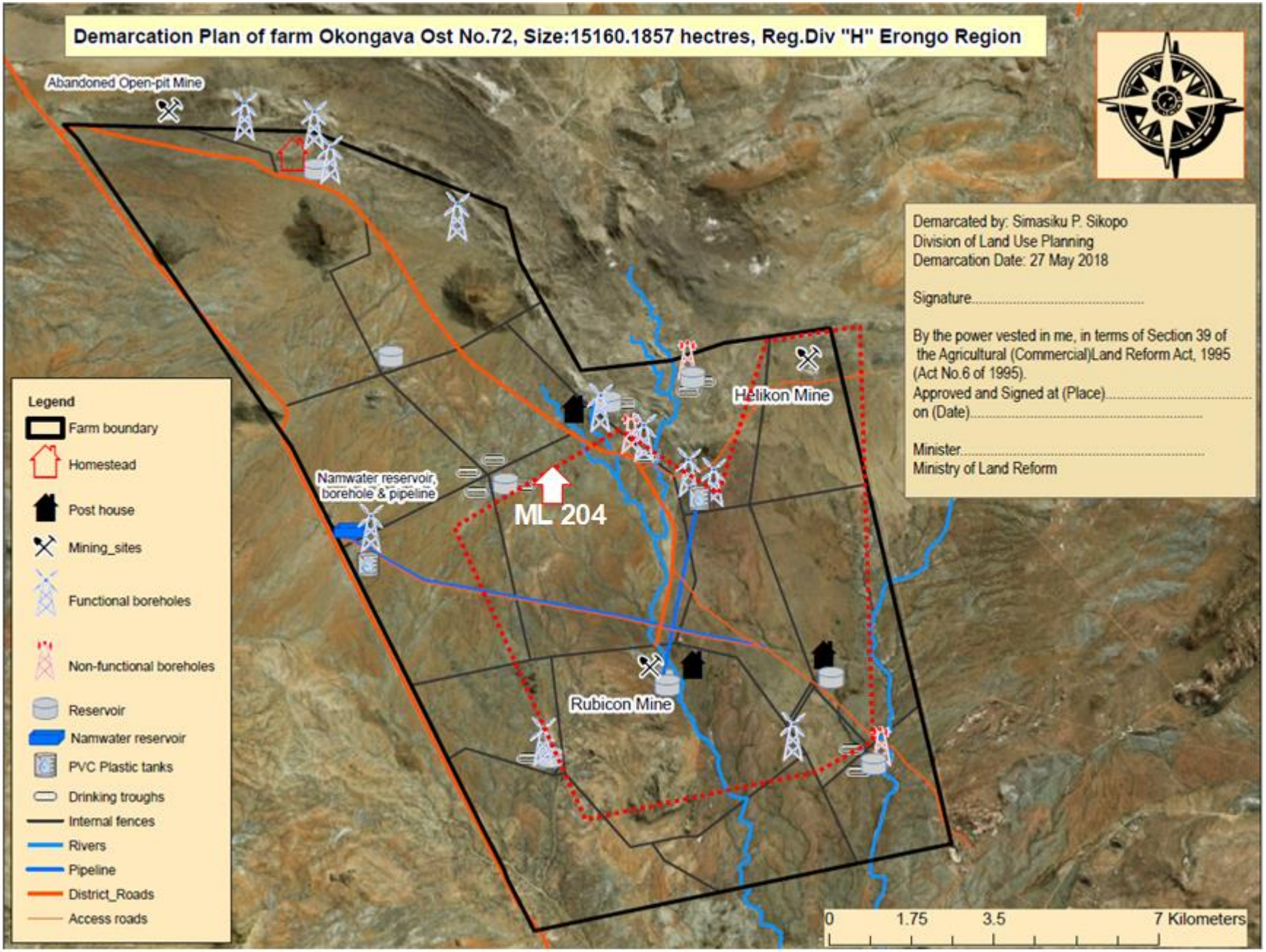


Figure 1.4: Detailed overview of the 15160 Ha Farm Okongava Ost No.72 area with respect to the 6930 Ha area of the ML 204 (Source: Lepidico, Base map Department of Land Reform, Ministry of Agriculture, Water and Land Reform, 2020).

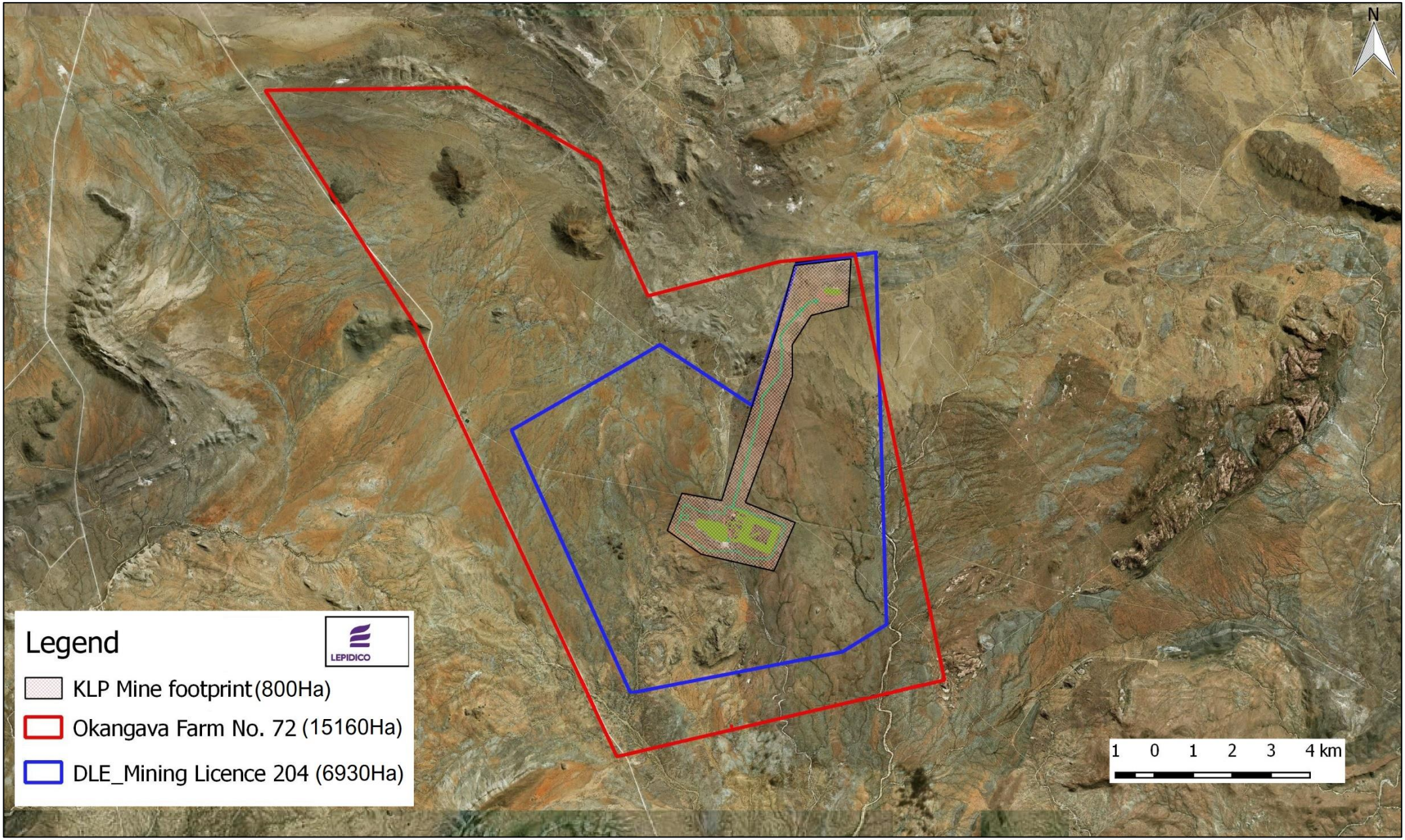


Figure 1.5: The 800Ha area footprint of the proposed Karibib Project with respect to the 6930 Ha area of the ML 204 and 15160Ha area of the Farm Okongava Ost No.72 (Source: Lepidico, 2020).

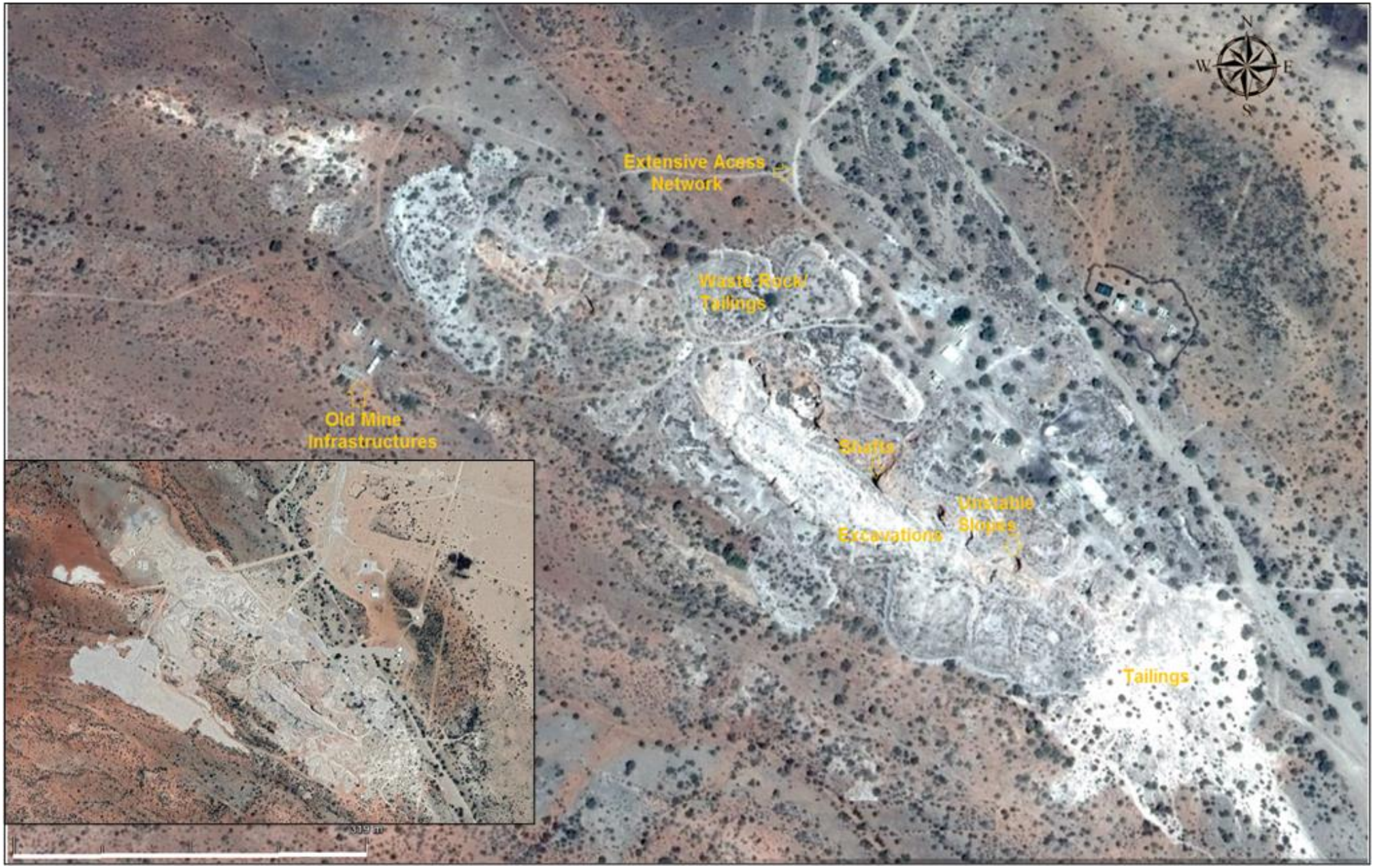


Figure 1.6 Example of the poor state of the environment around the Rubicon Old Mine Area (main target) within the ML 204 with historic open shafts, tailings, waste rock and excavation dating back to the 1950s when mining started in the area (Google Earth, 2016 and Google Map insert image, 2020).

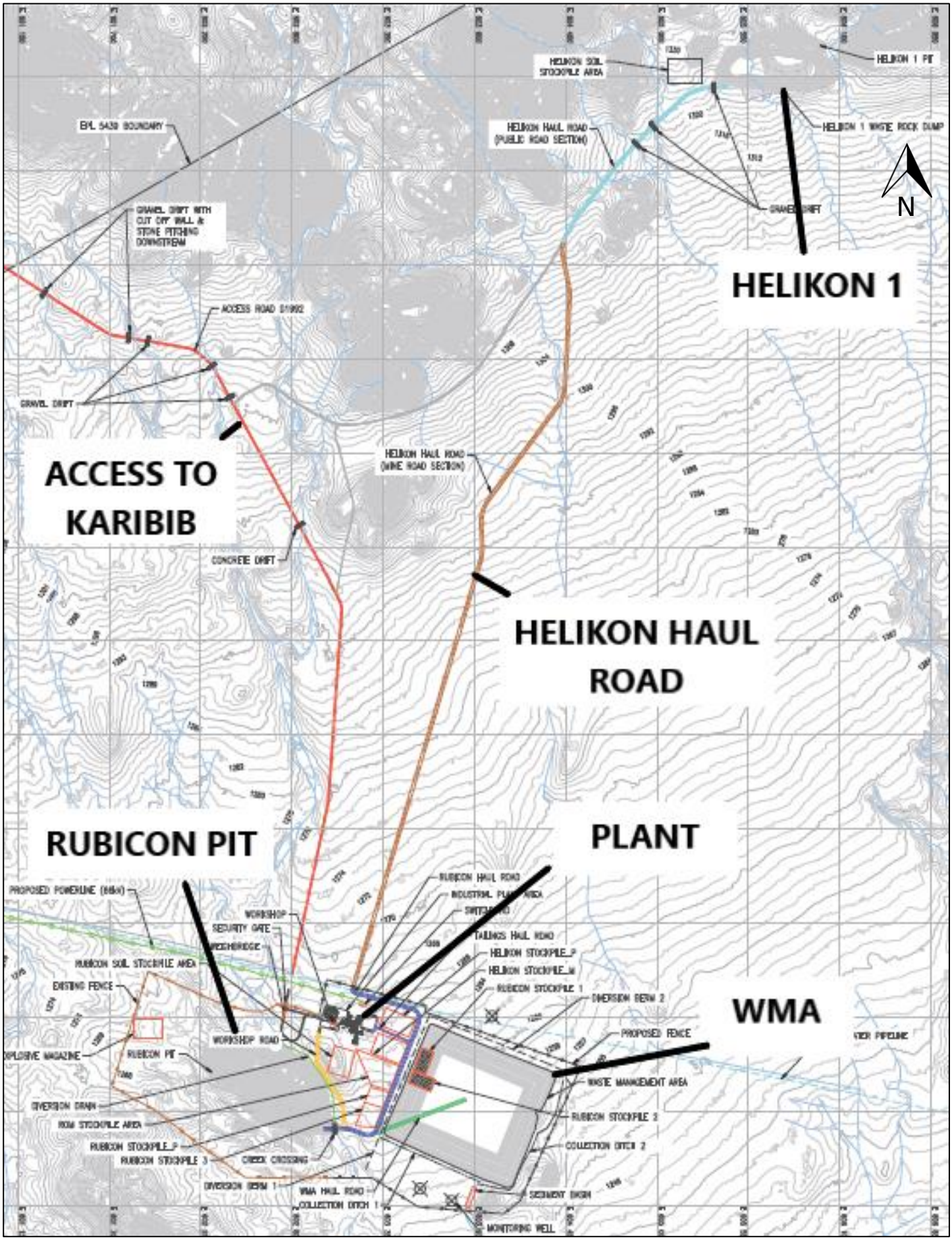


Figure 1.7: Karibib Project Overview on ML 204 (Source: Knight Piésold, 2020).

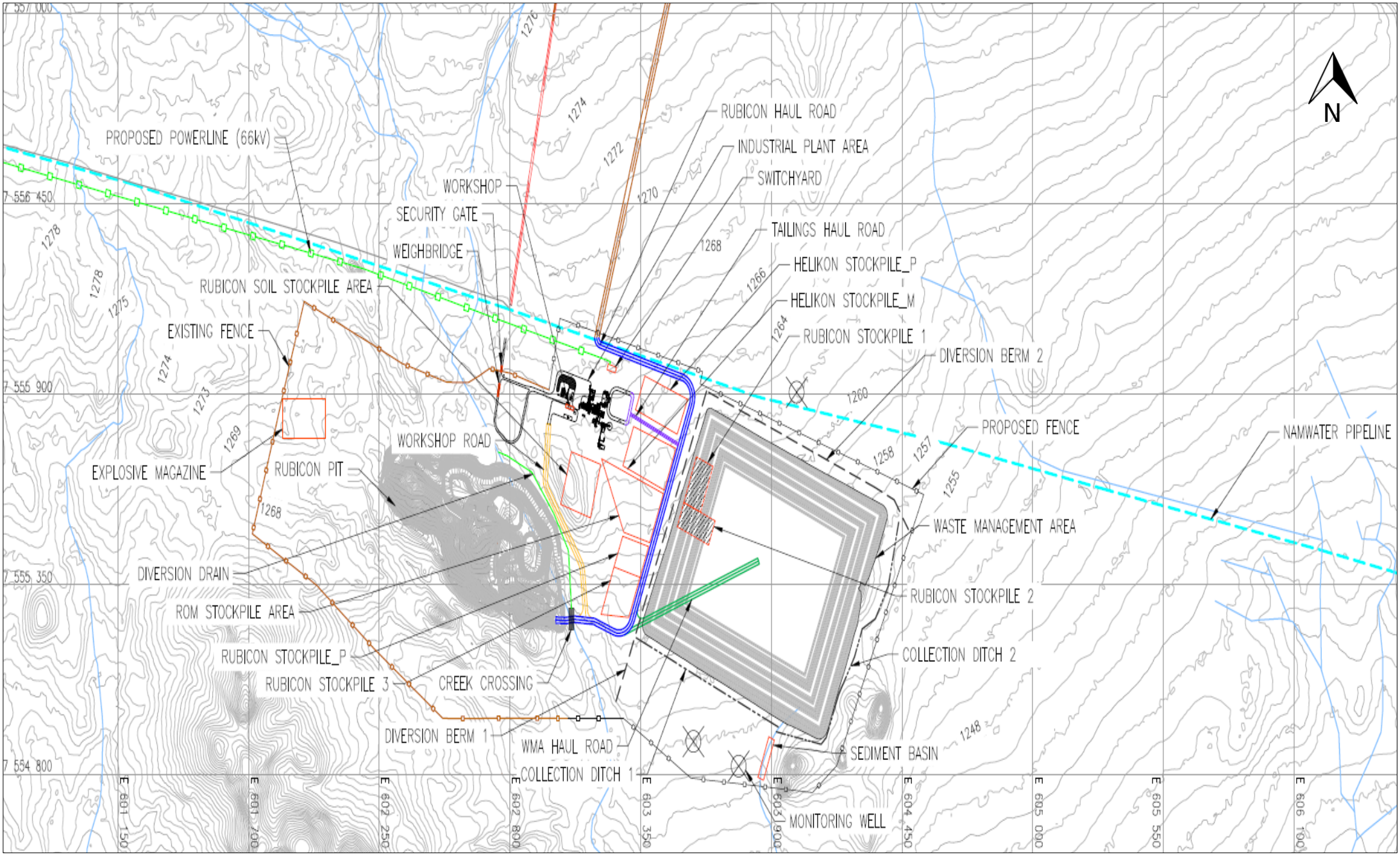


Figure 1.8: Rubicon operations general arrangement (Source: Knight Piésold, 2020).

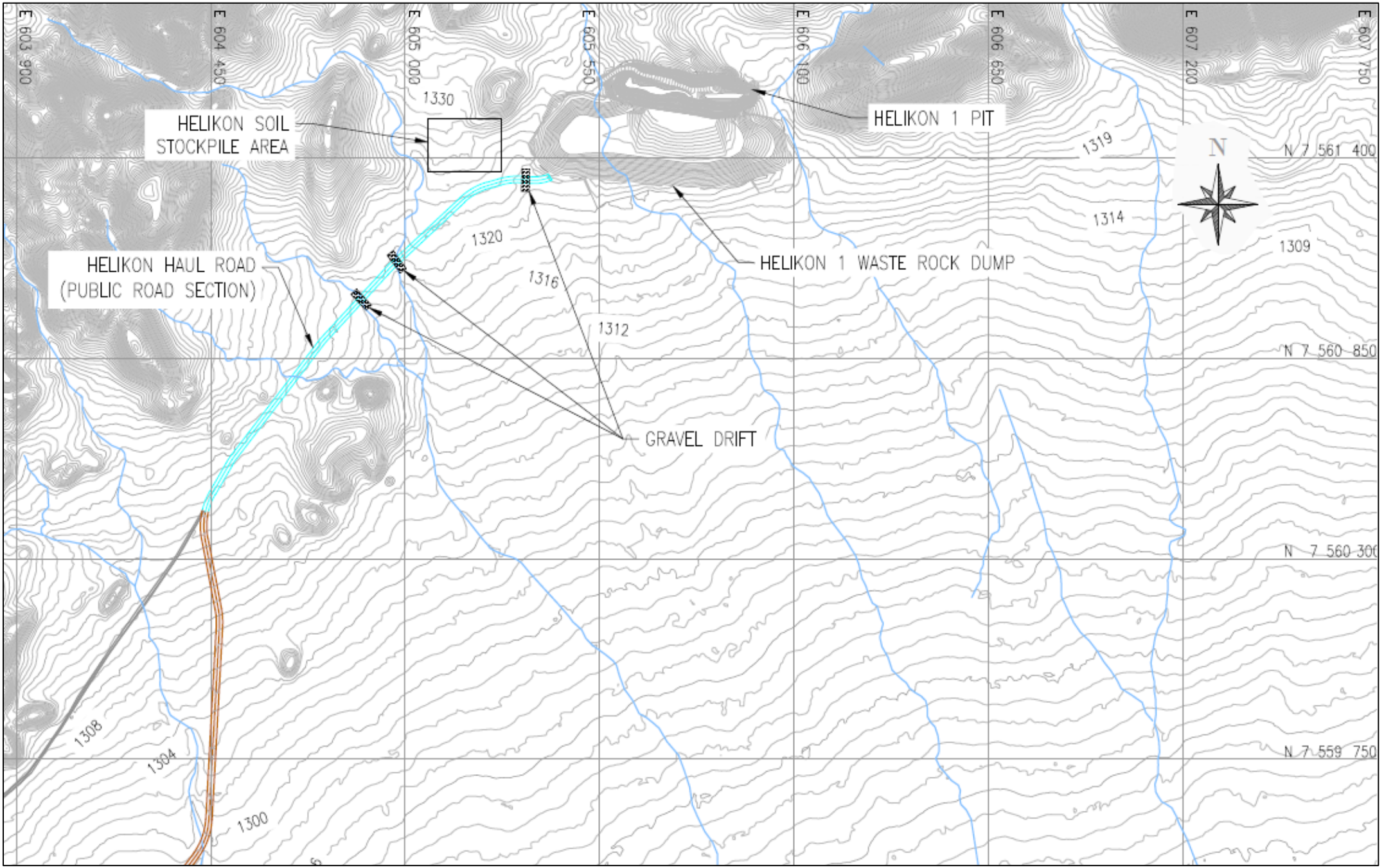


Figure 1.9: Helikon 1 open pit and waste management area general arrangement (Source: Knight Piésold, 2020).

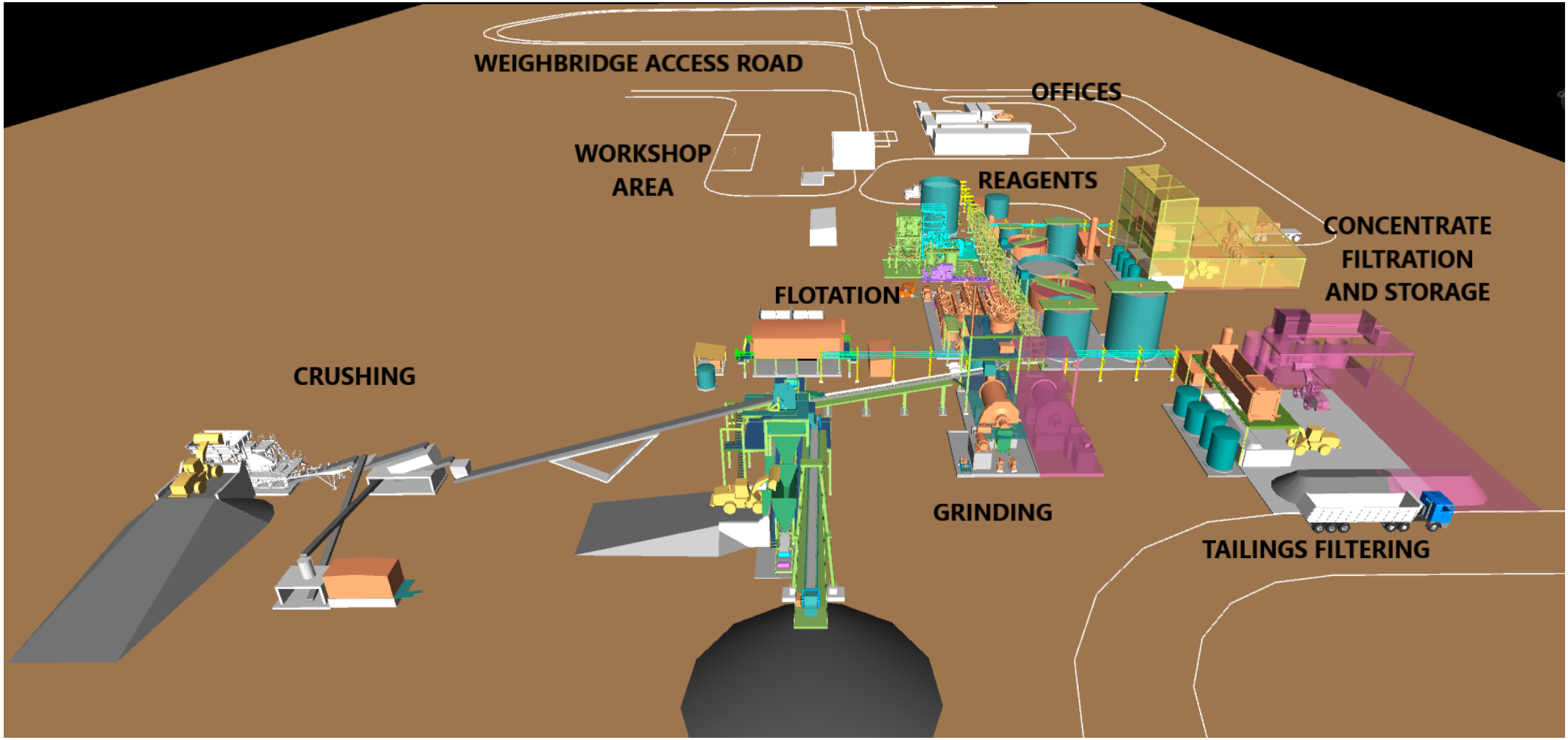


Figure 1.10: Processing Plant general view (Source: Lepidico, 2020).

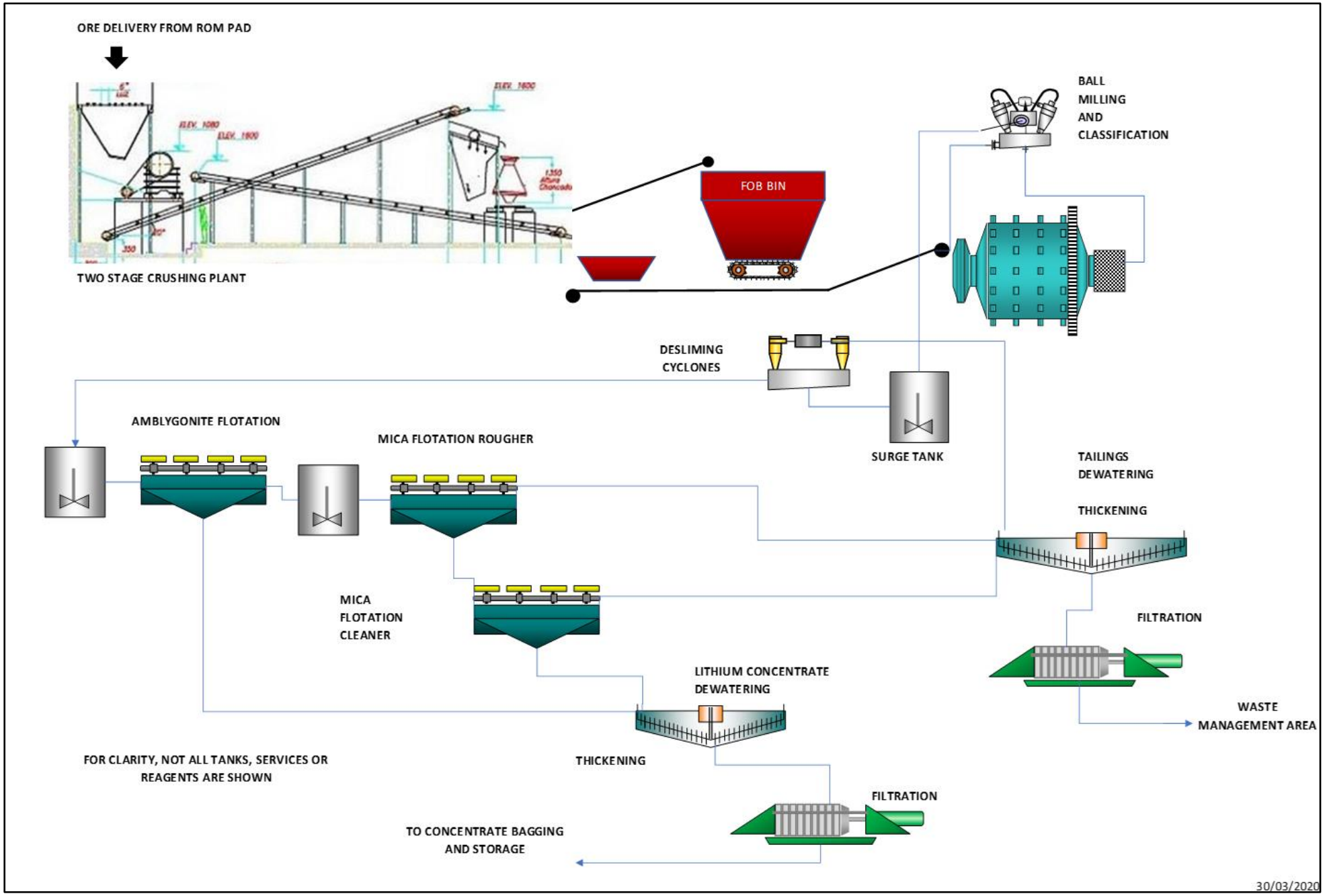


Figure 1.11: Simplified processing plant flowsheet (Source: Lepidico, 2020).

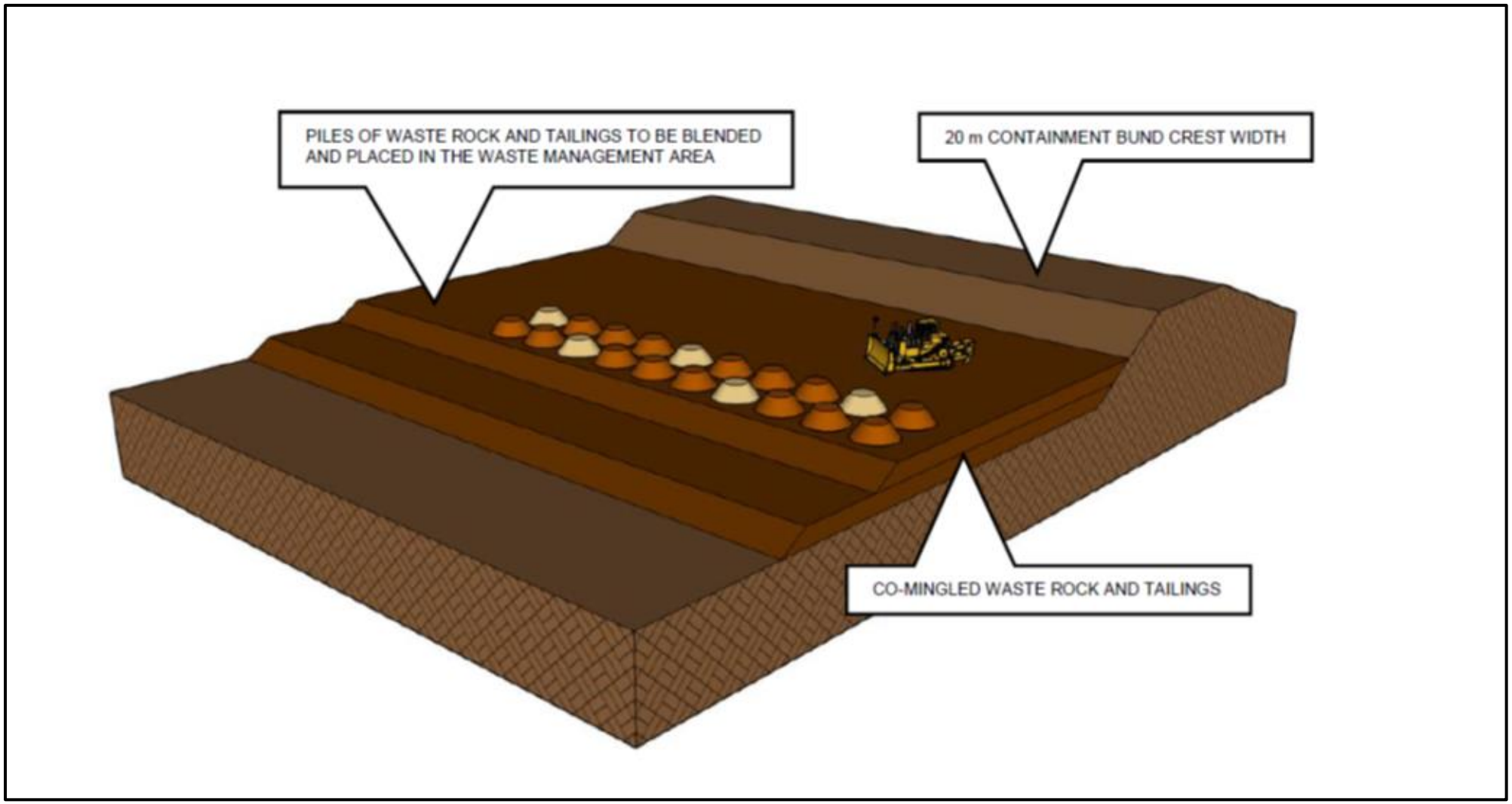


Figure 1.12: Waste Management Area Co-Disposal Schematic (Source: Lepidico, 2020).

2. OBJECTIVES OF THE ESMP

2.1 Summary Objectives

This ESMP provides a detailed plan of actions required in the implementation of the mitigation measures for minimising and maximising the identified negative and positive impacts respectively. The ESMP also provides the management actions with roles and responsibilities requirements for the successful implementation of environmental management strategies by Lepidico.

2.2 ESMP Management Linkages

The ESMP, described in this Report, is based on the findings as outlined in the ESIA Report. The ESMP must be continuously updated during the implementation of the proposed project. Within the framework of the existing Sustainability Policy of Lepidico Ltd, the ESMP is to be incorporated in the EMS of the company. This ESMP incorporates the Sustainability Policy Namibian Environmental regulations and policies as well as international environmental best practices in mining development, operational, rehabilitation, closure and aftercare activities.

2.3 Summary of Impact Assessment Results

2.3.1 Summary of Impacts Assessment Methodology

The following is the summary of the proposed Karibib Project developmental stages that have been assessed in the ESIA Report with mitigation measures provided in this ESMP Report:

(i) Preconstruction.

(ii) Construction.

(iii) Operation, ongoing exploration, monitoring and rehabilitation, and.

(iv) Decommissioning, closure and aftercare.

The detailed outline of all the activities associated with each of the above project developmental stages as sources of potential environmental impacts are outlined in Table 2.1. The impact assessment methodology has adopted a two-dimensional matrix approach in predicting the potential impacts of the proposed project on the receiving environment. The two-dimensional matrix consisted of the following cross-referencing (Tables 2.2 and 2.3):

- The activities linked to the project that could have an impact on people and the environment.
- The existing environmental and social conditions that could possibly be affected by the project.

The impact assessment considerations included land disturbance/land use impacts. potential impacts to specially designated areas. impacts to soil, water and air resources. impacts to vegetation, wildlife, wildlife habitat, and sensitive species. visual, cultural, paleontological, socioeconomic and potential impacts from hazardous materials are provided in the ESIA Report.

2.2.2 Summary of Impact Assessment Results

In order to determine the likely environmental impacts as well as the overall significant impact of individual sources associated with the proposed Karibib Project mining, minerals processing, and ongoing exploration operations within the ML 204 (Table 2.1), an impact identification and assessment process was undertaken as detailed in this report.

Details of the impact assessment results, definitions, methodology as well as the baseline \ receiving environment are provided in the ESIA Report.

As detailed in the ESIA Report, the significant impact identification and assessment processes focused on the evaluation of the influences of the proposed project activities pathways and the likely targets or receptor (receiving environment).

In this process, components of the project activities that are likely to impact the natural environment (physical, biological and socioeconomic) were broken down into individual development stages and activities.

The summary of the overall impact and significant impact assessment results as detailed in the ESIA Report associated with the proposed activities / sources of potential impacts with respect to the receiving environment that could potentially be affected are presented in Tables 2.2 and 2.3 respectively.

Table 2.1: Outline of proposed project developmental stages and all the associated activities as sources of potential environmental impacts.

PROJECT PHASE	DEVELOPMENT ACTIVITIES FOR EACH PHASE	
PRE CONSTRUCTION	1. General site clearing of the pit areas, administration block, WMAs, supporting infrastructure (Office blocks, water and electricity other site infrastructure	
	2. Access roads clearing	
	3. Top soil removal and storage	
	4. Development of the temporary construction facilities	
	5. Installation of campsites, offices, workshops, storage facilities.	
CONSTRUCTION	MINE SUPPORTING INFRASTRUCTURE	1. Transportation facilities, including access roads to the site and on-site roads
		2. Processing plant infrastructure including foundation and the entire structures
		3. Co-disposal Waste Management Area for tailing and waste rock
		4. Waste rock and ore stockpiles
		5. Water supply systems
		6. Onsite power infrastructure, including power distribution and metering systems
		7. Administration blocks and warehouses
		8. Fuel supply and storage facilities
		9. Workshop and equipment maintenance
		10. Chemicals and explosives storage facility
		11. Wastewater treatment systems
		12. Municipal solid waste storage / transfer facilities
		13. Storm water management around the plant, waste rock and tailings
		14. Testing the mining and processing facilities
	MINE WORKINGS	1. Excavation, drilling and blasting as may be required to create direct access to the ore body
		2. Actual pit excavation and stripping of the overburden to create direct access to the ore body
		3. Ore production for test mining operations
		4. Test mining and commissioning
OPERATION, ONGOING REHABILITATION AND MONITORING	1. Mining operations (actual mining operations including excavation, drilling, blasting as maybe required)	
	2. Transportation of the mined materials from pit to the processing plant for crushing, concentration and handling of concentrate	
	3. Transportation and storage of concentrate to be exported through the Port of Walvis Bay to the Chemical Conversion Plant in Abu Dhabi	
	4. Management and disposal of the co-disposal facility comprising tailings and waste rock materials	
	5. Management of water	
	6. Storage and management of hazardous materials	
	7. Ongoing exploration support	
	8. Ongoing rehabilitation and maintenance	
DECOMMISSIONING CLOSURE AND AFTERCARE	1. Implementation of sustainable socioeconomic plan	
	1. Closure / secure the open pits	
	2. Closure and secure the co-disposal Waste Management Area (WMA)	
	3. Backfill all excavated areas / sites except the pits	
	4. Closure of all storage sites (waste, rock, ore etc)	
	5. Decommissioning of onsite water and electricity infrastructure	
	6. Overall land reclamation around the ML area	
	7. Restoration of internal roads	
	8. Revegetation and aftercare as may be required	

Table 2.2: Karibib Project – overall impact assessment matrix results as detailed in the ESIA Report.

SCALE	DESCRIPTION
0	no observable effect
1	low effect
2	tolerable effect
3	medium high effect
4	high effect
5	very high effect (devastation)

SOURCES OF POTENTIAL IMPACT	PROJECT DEVELOPMENT PHASE		ACTIVITIES	RECEPTORS / TARGETS THAT MAY BE IMPACTED: PHYSICAL AND SOCIOECONOMIC ENVIRONMENT: Natural Environment – Air, Noise, Water, Green Space, Climate Change	PHYSICAL AND SOCIOECONOMIC ENVIRONMENT: Built Environment – Houses, Roads, Transport Systems, Buildings, Infrastructure	PHYSICAL AND SOCIOECONOMIC ENVIRONMENT: Socioeconomic, Human Rights, Natural and Social Capital, Archaeological and Cultural Resources	BIOLOGICAL ENVIRONMENT: Flora	BIOLOGICAL ENVIRONMENT: Fauna	BIOLOGICAL ENVIRONMENT: Habitat	BIOLOGICAL ENVIRONMENT: Ecosystem - Services, function, use values and non-use
SOURCES OF POTENTIAL IMPACT	PRE-CONSTRUCTION		1. General site clearing of the pit areas, administration block, WMAs, water and electricity other supporting infrastructure	3 (-)	1 (-)	3 (-)	3 (-)	3 (-)	3 (-)	3 (-)
			2. Access roads clearing / upgrading	3 (-)	1 (-)	3 (-)	3 (-)	3 (-)	3 (-)	3 (-)
			3. Top soil removal and storage for all operations	3 (-)	1 (-)	1 (-)	3 (-)	3 (-)	3 (-)	3 (-)
			4. Development of the temporary construction facilities	3 (-)	1 (-)	1 (-)	2(-)	2(-)	2(-)	2(-)
			5. Installation of campsites, offices, workshops, storage.	3 (-)	1 (-)	1 (-)	2(-)	2(-)	2(-)	2(-)
	CONSTRUCTION	MINE SUPPORTING INFRASTRUCTURE	1. Transportation facilities, including access roads to the site and on-site roads	3 (-)	1 (-)	1 (-)	3 (-)	3 (-)	3 (-)	3 (-)
			2. Processing plant infrastructure including foundation and the entire structures	3 (-)	1 (-)	1 (-)	2(-)	2(-)	2(-)	2(-)
			3. Co-disposal Waste Management Area for tailing and waste rock	3 (-)	1 (-)	1 (-)	3 (-)	3 (-)	3 (-)	3 (-)
			4. Waste rock and ore stockpiles	3 (-)	1 (-)	1 (-)	3 (-)	3 (-)	3 (-)	3 (-)
			5. Water supply systems	3 (-)	1 (-)	1 (-)	3 (-)	3 (-)	3 (-)	3 (-)
			6. Onsite power infrastructure, including power distribution and metering systems	3 (-)	1 (-)	1 (-)	3 (-)	3 (-)	3 (-)	3 (-)
			7. Administration blocks and warehouses	3 (-)	1 (-)	1 (-)	2(-)	2(-)	2(-)	2(-)
			8. Fuel supply and storage facilities	3 (-)	1 (-)	1 (-)	2(-)	2(-)	2(-)	2(-)
			9. Workshop and equipment maintenance	3 (-)	1 (-)	1 (-)	2(-)	2(-)	2(-)	2(-)
			10. Chemicals and explosives storage facility	3 (-)	1 (-)	1 (-)	2(-)	2(-)	2(-)	2(-)
			11. Wastewater treatment systems	3 (-)	1 (-)	1 (-)	2(-)	2(-)	2(-)	2(-)
			12. Municipal solid waste storage / transfer facilities	3 (-)	1 (-)	1 (-)	2(-)	2(-)	2(-)	2(-)
			13. Storm water management around the plant, waste rock and tailings	3 (-)	1 (-)	1 (-)	2(-)	2(-)	2(-)	2(-)
			14. Testing the mining and processing facilities	3 (-)	1 (-)	1 (-)	2(-)	2(-)	2(-)	2(-)
		MINE WORKINGS	1. Excavation, drilling and blasting to create access to the ore body	3 (-)	1 (-)	1 (-)	3 (-)	3 (-)	3 (-)	3 (-)
			2. Actual Pits excavation and stripping of the overburden to access the ore body	3 (-)	1 (-)	1 (-)	3 (-)	3 (-)	3 (-)	3 (-)
			3. Ore production for test mining operations	3 (-)	1 (-)	1 (-)	2(-)	2(-)	2(-)	2(-)
			4. Test mining process	3 (-)	1 (-)	1 (-)	2(-)	2(-)	2(-)	2(-)

Table 2.2: *Cont.*

SCALE	DESCRIPTION
0	no observable effect
1	low effect
2	tolerable effect
3	medium high effect
4	high effect
5	very high effect (devastation)

SOURCES OF POTENTIAL IMPACT	PROJECT DEVELOPMENT PHASE	ACTIVITIES	RECEPTORS / TARGETS THAT MAY BE IMPACTED						
			PHYSICAL AND SOCIOECONOMIC ENVIRONMENT			BIOLOGICAL ENVIRONMENT			
			Natural Environment – Air, Noise, Water, Green Space, Climate Change	Built Environment – Houses, Roads, Transport Systems, Buildings, Infrastructure	Socioeconomic, Human Rights, Natural and Social Capital, Archaeological and Cultural Resources	Flora	Fauna	Habitat	Ecosystem - Services, function, use values and non-use
	OPERATION, ONGOING MONITORING AND REHABILITATION	1. Mining operations (actual mining operations including excavation, drilling, blasting as maybe required)	3(-)	0(-)	3(-)	1(-)	2(-)	1(-)	1(-)
		2. Transportation of the mined materials from pit to the processing plant for sorting, two (2) stage crushing, screening and stockpile of concentrate	3(-)	1(-)	1(-)	1(-)	2(-)	1(-)	1(-)
		3. Transportation and storage of concentrate to be exported through the Port of Walvis Bay to Lepidolite Chemical Conversion Plant in Abu Dhabi	3(-)	1(-)	3(-)	1(-)	2(-)	1(-)	1(-)
		4. Management and disposal of the co-disposal facility comprising tailings and waste rock materials	3(-)	0(-)	0(-)	1(-)	2(-)	1(-)	1(-)
		5. Management of industrial and domestic waste water	2(-)	0(-)	0(-)	1(-)	2(-)	1(-)	1(-)
		6. Storage and management of hazardous materials	2(-)	0(-)	0(-)	1(-)	2(-)	1(-)	1(-)
		7. Ongoing exploration support	1(-)	0(-)	0(-)	1(-)	2(-)	1(-)	1(-)
		8. Ongoing rehabilitation and maintenance	1(-)	0(-)	0(-)	1(-)	2(-)	1(-)	1(-)
	DECOMMISSIONING CLOSURE AND AFTERCARE	1. Implementation of sustainable socioeconomic plan	0(-)	0(-)	3 (+)	2(-)	2(-)	2(-)	2(-)
		2. Closure / secure the open pits	3(-)	0(-)	3 (+)	2(-)	2(-)	2(-)	2(-)
		3. Closure and secure the co-disposal Waste Management Area (WMA)	3(-)	0(-)	3 (+)	2(-)	2(-)	2(-)	2(-)
		4. Backfill all excavated areas / sites except the pits	3(-)	0(-)	3 (+)	2(-)	2(-)	2(-)	2(-)
		5. Closure of all storage sites (waste, rock, ore etc)	2(-)	0(-)	3 (+)	2(-)	2(-)	2(-)	2(-)
		6. Decommissioning of onsite water and electricity infrastructure	2(-)	0(-)	3 (+)	2(-)	2(-)	2(-)	2(-)
		7. Overall land reclamation around the ML area	2(+)	0(-)	3 (+)	2(-)	2(-)	2(-)	2(-)
		8. Restoration of internal roads	2(-)	0(-)	3 (+)	2(-)	2(-)	2(-)	2(-)
		9. Revegetation and aftercare as may be required	1(+)	0(-)	3 (+)	2(-)	2(-)	2(-)	2(-)

Table 2.3: Karibib Project - overall significant impact assessment matrix results as detailed in the ESIA Report.

IMPACT SEVERITY	IMPACT LIKELIHOOD				
	Extremely Unlikely [0]	Unlikely [1]	Low Likelihood [2]	Medium Likelihood [3]	High Likelihood [4]
Slight [A]	[A0]	[A1]	[A2]	[A3]	[A4]
Low [B]	[B0]	[B1]	[B2]	[B3]	[B4]
Medium [C]	[C0]	[C1]	[C2]	[C3]	[C4]
High [D]	[D0]	[D1]	[D2]	[D3]	[D4]

				RECEPTORS / TARGETS THAT MAY BE IMPACTED						
				PHYSICAL AND SOCIOECONOMIC ENVIRONMENT			BIOLOGICAL ENVIRONMENT			
SOURCES OF POTENTIAL IMPACT	PROJECT DEVELOPMENT PHASE		ACTIVITIES	Natural Environment – Air, Noise, Water, Green Space, Climate Change	Built Environment – Houses, Roads, Transport Systems, Buildings, Infrastructure	Socioeconomic, Human Rights, Natural and Social Capital, Archaeological and Cultural Resources	Flora	Fauna	Habitat	Ecosystem - Services, function, use values and non-use
	PRE-CONSTRUCTION		1. General site clearing of the pit areas, administration block, waste rock, tailings, water and electricity other supporting infrastructure	B4 (-)	A1(-)	D3(+)	B3(-)	B3(-)	B3(-)	B3(-)
			2. Access roads clearing / upgrading	B4 (-)	A1(-)	D3 (+)	B3(-)	B3(-)	B3(-)	B3(-)
			3. Top soil removal and storage for all operations	B4 (-)	A1(-)	A1(-)	B3(-)	B3(-)	B3(-)	B3(-)
			4. Development of the temporary construction facilities	B4 (-)	A1(-)	A1(-)	B2 (-)	B2 (-)	B2 (-)	B2 (-)
			5. Installation of campsites, offices, workshops, storage.	B4 (-)	A1(-)	A1(-)	B2 (-)	B2 (-)	B2 (-)	B2 (-)
	CONSTRUCTION	MINE SUPPORTING INFRASTRUCTURE	1. Transportation facilities, including access roads to the site and on-site roads	B4 (-)	A1(-)	A1(-)	B3(-)	B3(-)	B3(-)	B3(-)
			2. Processing plant infrastructure including foundation and the entire structures	B4 (-)	A1(-)	A1(-)	B3(-)	B3(-)	B3(-)	B3(-)
			3. Co-disposal Waste Management Area for tailing and waste rock	B4 (-)	A1(-)	A1(-)	B3(-)	B3(-)	B3(-)	B3(-)
			4. Waste rock and ore stockpiles	B4 (-)	A1(-)	A1(-)	B3(-)	B3(-)	B3(-)	B3(-)
			5. Water supply systems	B4 (-)	A1(-)	A1(-)	B3(-)	B3(-)	B3(-)	B3(-)
			6. Onsite power infrastructure, including power distribution and metering systems	B4 (-)	A1(-)	A1(-)	B4 (-)	B4 (-)	B4 (-)	B4 (-)
			7. Administration blocks and warehouses	B4 (-)	A1(-)	A1(-)	B2 (-)	B2 (-)	B2 (-)	B2 (-)
			8. Fuel supply and storage facilities	B4 (-)	A1(-)	A1(-)	B2 (-)	B2 (-)	B2 (-)	B2 (-)
			9. Workshop and equipment maintenance	B4 (-)	A1(-)	A1(-)	B2 (-)	B2 (-)	B2 (-)	B2 (-)
			10. Chemicals and explosives storage facility	B4 (-)	A1(-)	A1(-)	B2 (-)	B2 (-)	B2 (-)	B2 (-)
			11. Wastewater treatment systems	B4 (-)	A1(-)	A1(-)	B2 (-)	B2 (-)	B2 (-)	B2 (-)
			12. Municipal solid waste storage / transfer facilities / station	B4 (-)	A1(-)	A1(-)	B2 (-)	B2 (-)	B2 (-)	B2 (-)
			13. Storm water management around the plant, waste rock and tailings	B4 (-)	A1(-)	A1(-)	B2 (-)	B2 (-)	B2 (-)	B2 (-)
			14. Testing the mining and processing facilities	B4 (-)	A1	A1(-)	B2 (-)	B2 (-)	B2 (-)	B2 (-)
		MINE WORKINGS	1. Excavation, drilling and blasting to create access to the ore body	B4 (-)	A1(-)	A1(-)	B3(-)	B3(-)	B3(-)	B3(-)
			2. Actual Pits excavation and stripping of the overburden to access the ore body	B4 (-)	A1(-)	A1(-)	B3(-)	B3(-)	B3(-)	B3(-)
			3. Ore production for test mining operations	B4 (-)	A1(-)	A1(-)	B3(-)	B3(-)	B3(-)	B3(-)
			4. Test mining process	B4 (-)	A1(-)	A1(-)	B3(-)	B3(-)	B3(-)	B3(-)
			5. Excavation, drilling and blasting to create access to the ore body	B4 (-)	A1(-)	A1(-)	B3(-)	B3(-)	B3(-)	B3(-)

Table 2.3: *Cont.*

IMPACT SEVERITY	IMPACT LIKELIHOOD				
	Extremely Unlikely [0]	Unlikely [1]	Low Likelihood [2]	Medium Likelihood [3]	High Likelihood [4]
Slight [A]	[A0]	[A1]	[A2]	[A3]	[A4]
Low [B]	[B0]	[B1]	[B2]	[B3]	[B4]
Medium [C]	[C0]	[C1]	[C2]	[C3]	[C4]
High [D]	[D0]	[D1]	[D2]	[D3]	[D4]

SOURCES OF POTENTIAL IMPACT	PROJECT DEVELOPMENT PHASE	ACTIVITIES	RECEPTORS / TARGETS THAT MAY BE IMPACTED: PHYSICAL AND SOCIOECONOMIC ENVIRONMENT			BIOLOGICAL ENVIRONMENT			
			Natural Environment – Air, Noise, Water, Green Space, Climate Change	Built Environment – Houses, Roads, Transport Systems, Buildings, Infrastructure	Socioeconomic, Human Rights, Natural and Social Capital, Archaeological and Cultural Resources	Flora	Fauna	Habitat	Ecosystem - Services, function, use values and non-use
	OPERATION, ONGOING MONITORING AND REHABILITATION	1. Mining operations (actual mining operations including excavation, drilling, blasting as maybe required)	C3(-)	A1(-)	D3 (+)	A1(-)	B4 (-)	A1(-)	A1(-)
		2. Transportation of the mined materials from pit to the processing plant for sorting, two (2) stage crushing, screening and stockpile of concentrate	C3(-)	A1(-)	A1(-)	A1(-)	B4 (-)	A1(-)	A1(-)
		3. Transportation and storage of concentrate to be exported through the Port of Walvis Bay to Lepidolite Chemical Conversion Plant in Abu Dhabi	C3(-)	A1(-)	D3 (+)	A1(-)	B4 (-)	A1(-)	A1(-)
		4. Management and disposal of the co-disposal facility comprising tailings and waste rock materials	C3(-)	A1(-)	A1(-)	A1(-)	B4 (-)	A1(-)	A1(-)
		5. Management of industrial and domestic waste water	B2 (-)	A1(-)	A1(-)	A1(-)	B4 (-)	A1(-)	A1(-)
		6. Storage and management of hazardous materials	B2 (-)	A1(-)	A1(-)	A1(-)	B2 (-)	A1(-)	A1(-)
		7. Ongoing exploration support	A1(-)	A1(-)	A1(-)	A1(-)	B2 (-)	A1(-)	A1(-)
		8. Ongoing rehabilitation and maintenance	A1(-)	A1(-)	A1(-)	A1(-)	B2 (-)	A1(-)	A1(-)
	CLOSURE AND AFTERCARE	1. Implementation of sustainable socioeconomic plan	A1(-)	A1(-)	D3 (+)	B2 (-)	B2 (-)	B2 (-)	B2 (-)
		2. Closure / secure the open pits	C3(-)	A1(-)	B4 (-)	B2 (-)	B2 (-)	B2 (-)	B2 (-)
		3. Closure and secure the co-disposal Waste Management Area (WMA)	C3(-)	A1(-)	B4 (-)	B2 (-)	B2 (-)	B2 (-)	B2 (-)
		4. Backfill all excavated areas / sites except the pits	C3(-)	A1(-)	B4 (-)	B2 (-)	B2 (-)	B2 (-)	B2 (-)
		5. Closure of all storage sites (waste, rock, ore etc)	B4 (-)	A1(-)	B4 (-)	B2 (-)	B2 (-)	B2 (-)	B2 (-)
		6. Decommissioning of onsite water and electricity infrastructure	B4 (-)	A1(-)	B4 (-)	B2 (-)	B2 (-)	B2 (-)	B2 (-)
		7. Overall land reclamation around the ML area	B4 (-)	A1(-)	B4 (-)	B2 (-)	B2 (-)	B2 (-)	B2 (-)
		8. Restoration of internal roads	B4 (-)	A1(-)	B4 (-)	B2 (-)	B2 (-)	B2 (-)	B2 (-)
		9. Revegetation and aftercare as may be required	A1(-)	A1(-)	B4 (-)	B2 (-)	B2 (-)	B2 (-)	B2 (-)

2.4 Hierarchy of ESMP Mitigation Measures Implementation

A hierarchy of methods for mitigating significant adverse effects has been adopted in order of preference and as follows:

(i) Enhancement, e.g. prioritising local employment opportunities and services or provision of new habitats.

(ii) Avoidance, e.g. corporate policy to promote coexistences or sensitive design to avoid effects on ecological receptors.

(iii) Reduction, e.g. limitation of effects on receptors through design changes, and.

(iv) Compensation, e.g. community benefits.

2.5 Roles and Responsibilities for Mitigation Measures Implementation

2.5.1 Overview

Management of the environmental elements that may be affected by the different activities of the proposed Karibib Project mining and ongoing exploration activities is an important element of the this ESMP. The ESMP identifies the activity groups / environmental elements, the aspects / targets, the indicators, the schedule for implementation and who should be responsible for the management to prevent major impacts that the different project activities may have on the receiving environment as assessed in the ESIA with the impact assessment results summarised in Tables 2.2 - 2.3.

It's highly imperative that there is an effective and response organisational structure of Lepidico Chemicals Namibia (Pty) Ltd that defines the roles, responsibilities and authority to implement the provisions of this ESMP. The summary of such a structure is shown in Fig. 2.1. Provision shall be made, on an ongoing basis, for sufficient management support and human and financial resources.

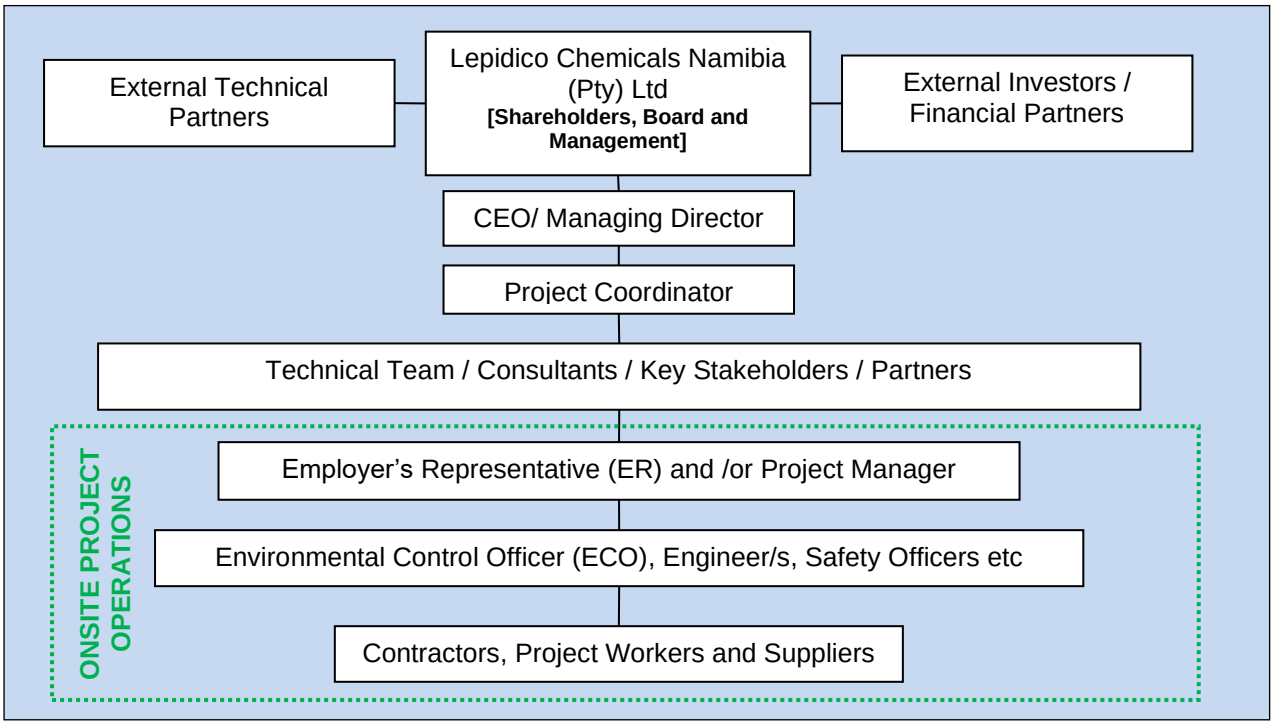


Figure 2.1: Lepidico Chemicals Namibia (Pty) Ltd organisational structure for the proposed Karibib Project with respect to the implementation of the ESMP.

2.5.2 Employer's Representative (ER)

Lepidico Chemicals Namibia (Pty) Ltd is to appoint an **ER** with the following responsibilities covering the overall socioeconomic aspects, preconstruction, construction, operation, ongoing exploration, monitoring and rehabilitation and decommissioning, closure and aftercare phases of the proposed Karibib Project activities:

- Act as the Employer's (Lepidico Chemicals Namibia (Pty) Ltd) on-site project manager and implementing agent.
- Appoint the Environmental Control Officer (ECO).
- Ensure that the Employer's responsibilities are executed in compliance with the relevant legislation and the ESMP for the construction stage.
- Ensure that all the necessary environmental authorisations and permits have been obtained.
- Assist the Contractor in finding environmentally responsible solutions to challenges that may arise (with input from the ECO).
- Should the ER be of the opinion that a serious threat to, or impact on the environment may be caused by the construction operations, he/she may stop work. the Employer must be informed of the reasons for the stoppage as soon as possible.
- The ER or as may be contractually delegated, has the authority to institute disciplinary proceedings in accordance with the provisions of the national laws for transgressions of basic conduct rules and/or contravention of the ESMP.
- Should the Contractor or his/her employees fail to show adequate consideration for the environmental aspects related to the ESMP, the ER can have person(s) and/or equipment removed from the site or work suspended until the matter is remedied.
- Report to the Employer on the implementation of this ESMP on site (with input from the ECO and/or independent environmental auditor).
- Maintain open and direct lines of communication between the Employer, ECO, Contractor and stakeholders with regards to environmental matters, and.
- Attend regular site meetings and inspections.

2.5.3 Environmental Control Officer (ECO)

The **ECO** has the following responsibilities covering the overall socioeconomic aspects, preconstruction, construction, operation, ongoing exploration, monitoring and rehabilitation and decommissioning, closure and aftercare phases of the proposed Karibib Project activities:

- Assist the ER in ensuring that the necessary environmental authorizations and permits have been obtained.
- Assist the ER and Contractor in finding environmentally responsible solutions to challenges that may arise.
- Conduct environmental monitoring as per ESMP requirements.
- Oversee basic conduct rules and/or contraventions of the ESMP to the ER.
- Advise the ER on the removal of person(s) and/or equipment not complying with the specifications of the ESMP.

- ❖ Carry out regular site inspections (on average once per week) of all construction areas with regards to compliance with the ESMP. report any non-compliance(s) to the ER as soon as possible.

- ❖ Organize for an independent internal audit on the implementation of and compliance to the ESMP to be carried out half way through the construction period. audit reports to be submitted to the ER.

- ❖ Organize for an independent post-construction environmental audit to be carried out before operations commence.

- ❖ Continuously review the ESMP and recommend additions and/or changes to the ESMP document.

- ❖ Monitor the Contractor's environmental awareness training for all new personnel coming onto site.

- ❖ Keep records of all activities related to environmental control and monitoring. the latter to include a photographic record of the construction and environmental control and rehabilitation process, and a register of all major incidents, and.

- ❖ Attend regular site meetings.

2.5.4 Contractors and Subcontractors

The responsibilities of the **Contractors and Subcontractors** covering the overall socioeconomic aspects, preconstruction, construction, operation, ongoing exploration, monitoring and rehabilitation and decommissioning, closure and aftercare phases of the proposed Karibib Project activities include:

- ❖ Comply with the relevant legislation and the ESMP for the Construction Phase of the proposed mine.

- ❖ Preparation and submission to Lepidico Chemicals Namibia (Pty) Ltd of the following Management Plans:

    - o Environmental awareness training and inductions.

    - o Emergency preparedness and response.

    - o Waste management procedure, and.

    - o Health and safety requirements.

- ❖ Ensure adequate environmental awareness training for senior site personnel.

- ❖ Environmental awareness presentations (inductions) to be given to all site personnel prior to work commencement. the ECO is to provide the course content and the following topics, at least but not limited to, should be covered:

    - o The importance of complying with the relevant Namibian, international and best practice legislation.

    - o Roles and Responsibilities, including emergency preparedness.

    - o Basic rules of conduct (Do's and Don'ts).

    - o ESMP: aspects, impacts and mitigation.

- Disciplinary procedures in accordance with the provisions of the law for failure to adhere to the ESMP, and.
- Health and Safety requirements.

❖ Record keeping of all environmental awareness training and induction presentations, and.

❖ Attend regular site meetings and environmental inspections.

2.5.5 Construction Supporting Teams

The construction of the mine infrastructures and mine workings with activities as outlined in Table 3.1 will require an array of specialist teams working very closely with their suppliers and core Lepidico Chemicals Namibia (Pty) Ltd onsite operations team.

The following is a summary of some of the specialists that will be required as part of the team of contractors and subcontractors covering the overall socioeconomic aspects during preconstruction, construction, operation, ongoing exploration, monitoring and rehabilitation and decommissioning, closure and aftercare phases of the proposed Karibib Project activities:

❖ Mining, structural, civil and mechanical engineers and crane contractors, electrical contractors and other specialist teams, each with their respective sub-contractors and suppliers, would report directly to the Employer's Representative (ER), acting as the onsite Project Manager.

3. THE ESMP

3.1 Overview

An ESMP is one of the most important outputs of the environmental assessment process and is the synthesis of all the proposed mitigation and monitoring actions, set to a timeline and with specific assigned responsibilities. The aim of the ESMP is to assist Lepidico Chemicals Namibia (Pty) Ltd (the Proponent), Contractors and Subcontractor to ensure that the day-to-day operations as well as medium to long term strategies are carried out in an environmentally responsible manner, thereby preventing or minimising the negative effects and maximising the positive effects of the project-related activities on the natural receiving environment.

The ESMP provides a detailed plan of action required in the implementation of the mitigation measures for minimising and maximising the identified negative and positive impacts respectively. The ESMP also provides the management actions with roles and responsibilities requirements for implementation of environmental management strategies by the Proponent through the Contractors and Subcontractors who will be undertaking the various activities of the proposed Karibib Project. The ESMP gives commitments including financial and human resources provisions for effective management of the likely environmental liabilities during and after the implementation of the proposed mining operations and ongoing exploration programme.

Separate Management Plans (MPs) have been prepared for the Karibib Project covering the overall socioeconomic aspects, preconstruction, construction, operation, ongoing exploration, monitoring and rehabilitation and decommissioning, closure and aftercare phases of the proposed Karibib Project activities. The MPs are presented as comprehensive matrices: for each Activity/Process and related Aspects (defined by the International Organisation for Standardisation ISO 14001:2004 as element of an organisation's activities or products or services that can interact with the environment; environment is defined as surroundings in which an organisation operates, including air, water, land, natural resources, flora, fauna, humans, and their interrelation) and Impacts (any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's environmental aspects), Management Actions required to address the impacts arising directly and indirectly from the various aspects of the proposed mining project, with Responsible Persons and Timing for each, are listed.

3.2 Project Socio-economic Management Plans (MPs)

Based on the findings of the 2017 and 2020 socioeconomic specialists' assessments and the impact assessment undertaken in ESIA Report and summarised in Tables 2.2-2.3 of this ESMP Report, the Karibib Project will have local, regional and national positive impacts. The proposed Karibib Project will provide many benefits to Namibia. These benefits include the following:

(i) Provide 115 direct jobs to benefit Namibians with an estimated additional 805 indirect jobs, contracts, services and associated livelihoods to be created and will support many more Namibian families.

(ii) Socioeconomic benefits including upgrading and maintenance of road and water infrastructures in the local farm area for greater benefits of the local community.

(iii) Greater environmental benefits and Government financial savings through remediation of the targeted previously abandoned and unrehabilitated mine sites around the ML 204 area.

(iv) Value addition to the in-situ potential minerals resources in the area which otherwise would not have been known if the proposed mining and ongoing exploration activities in ML 204 did not take place.

(v) Through ongoing exploration and the potential discovery of additional economic minerals resources and the expansion of the proposed mining and minerals processing operations

will have much greater local (Karibib Area), regional (Erongo Region) and national (Namibia) socioeconomic benefits, and.

(vi) Additional socioeconomic benefits will also be realised at regional and national levels in terms of capital investments, license rental fees, royalties payable to Government, export earnings, foreign direct investments and various taxes payable to the Government.

In order to enhance the above listed likely positive socioeconomic benefits / impacts that the Karibib Project may have on the local, regional and national environments, mitigation measures have been provided in this ESMP and are presented in Table 3.1.

Overall, however, the Karibib Project may also have some socioeconomic negative impacts during the preconstruction, construction, operation, ongoing exploration, monitoring and rehabilitation and decommissioning, closure and aftercare phases. Mitigation measures to the likely negative socioeconomic impacts as outlined in Table 3.2.

Table 3.1: Socio-economic MP – Positive Impacts.

ASPECT	IMPACT	MANAGEMENT ACTIONS	RESPONSIBLE PERSON(S)		TIMING
1) Creation of employment opportunities	• Direct economic impact would arise from employment opportunities for unskilled or semi-skilled workers. Through the provision of employment, the quality of life of these people will improve.	• Prioritise equal recruitment of local people and Namibian citizens in all structures of the company	Lepidico Chemicals Namibia (Pty) Ltd shall: • Stipulate that local residents should be employed for temporary unskilled/skilled and where possible in permanent unskilled/skilled positions as they would reinvest in local economy. However, due to low skills levels of the local population, the majority of skilled positions would be filled with people from outside the area. • The recruitment selection process should seek to promote gender equality and the employment of women wherever possible • Ensure that contractors adhere to Namibian Affirmative Action, Labour and Social Security, Health and Safety laws. • The local authorities, community organizations and community leaders could be informed on final decisions regarding the project and the potential job opportunities for locals. • Stipulate a preference for local contractors in its tender policy. The procurement of services and goods from local entrepreneurs and the engagement of local businesses should be favoured and promoted providing that it is financially and practically feasible. • Undertake a skills audit, develop a database of local businesses that qualify as potential service providers and invite them to the tender process. • Scrutinise tender proposals to ensure that minimum wages were included in the costing.	• Lepidico Chemicals Namibia (Pty) Ltd • Contractor	Ongoing throughout the proposed Karibib Project lifecycle
2) Expanded local and regional economic opportunities	• Local economy could be boosted. Induced economic impact would arise from products and services purchased by employees and contractors with the increased availability of money broadening the economic base and boosting the economy at the Constituency level as well as Regional level.	• Prioritise the procurement of local goods and services			
3) Opportunities for skills development.	• Opportunities for skills development, knowledge transfer and training	• Prioritise employees skills development and training opportunities	• Project offers experience and on job skills development, particularly for low or semi-skilled workers. This would raise the workers experience and skills to secure jobs in future. • Promising employees could be identified and training and skills development programme could be initiated. • The project could organize business partnerships with local entrepreneurs or small SMEs. • Service providers to provide opportunities for skills transfer. • Provide opportunities for employees re-skilling		

Table 3.2: Socio-economic MP – Negative Impacts.

ASPECT	IMPACT	MANAGEMENT ACTIONS	RESPONSIBLE PERSON(S)		TIMING
1) Unrealistic employment opportunities to be provided by the Karibib Project	• In-flux of workers employed by contractors as well as a potential influx of job seekers, resulting in potential mushrooming of informal settlements around the Karibib project.	• Address unrealistic expectations about the job opportunities by informing the local authorities, community organisations and community leaders on final decisions regarding the project and the potential job opportunities • Promote coexistence between the Karibib Project operations and the local communities, farmers, local authorities, community organisations and community leaders	• It is almost impossible to prevent people from moving into an area in search of job opportunities. Addressing unrealistic expectations about the job opportunities could assist by informing the local authorities, community organisations and community leaders on final decisions regarding the project and the potential job opportunities. • Notify the land-owner(s) if there is an increase in the number of new settlements / housing structures being created around the mine compared to the baseline.	• Lepidico Chemicals Namibia (Pty) Ltd • Contractor	Ongoing throughout the proposed Karibib Project lifecycle
	• Increased crime rates often associated with alcohol and drug abuse. This could be the result of unsuccessful jobseeker needing to find alternative source of income or could be the result of contract workers		• Contract companies to submit a code of conduct, stipulating disciplinary actions where employees are guilty of criminal activities in and around the vicinity of the Karibib Project area/s of influence. Disciplinary actions should be in accordance with Namibian legislation. Contract companies could implement a no-tolerance policy regarding the use of alcohol and workers should submit to a breathalyser test upon reporting for duty daily.		
2) Workers and influx of people seeking employment opportunities may create conflicts with the local people / farmer or between employees and job seekers	• Karibib Project employees and contractor coexistence with the local farmers and also result in stock theft, poaching and damage to farm infrastructure, for example, fences and gates.		• Develop a code of conduct for the Karibib Project employees and contractors to address conflicts that may arise. • Develop a compensation policy or framework for stock losses and/or damage to neighbouring farms infrastructure that can be linked to the Karibib Project operations. • Ensure that all employees are informed of the consequences of stock theft and trespassing on adjacent farms. • Ensure that employees who are found guilty of stealing livestock and/or damaging farm infrastructure are dismissed and charged in accordance with the national laws. All dismissals must be in accordance with Namibia's labour legislation		
3) Karibib Town Council Overwhelmed by a sudden increase in the local population	• Increased demands on formal housing, school placements, municipal services, infrastructure and health services		• The local authorities, community organisations and community leaders could be informed on final decisions regarding the project and the potential job opportunities and the need for housing, school placements, municipal services, infrastructure and health services in the town of Karibib • Coordinate with the Karibib Town Council on the provisions of serviced land for housing for the employees of the Karibib Project		

3.3 Preconstruction and Construction ESMP

The main activities of the preconstruction stage will be the bush clearing, widening and grading including rehabilitation, of the existing internal access roads within the ML area and creation of temporary constriction facilities and other mine supporting infrastructures. The external road, the D1992 linking the ML 204 area to the town of Karibib, already exists and it is in good working condition. The following is the summary of the preconstruction activities of the proposed Karibib Project:

(i) General site clearing of the pit areas, administration block, waste rock, tailings, water and electricity other supporting infrastructure.

(ii) Access roads clearing / upgrading.

(iii) Top soil removal and storage for all operations.

(iv) Development of the temporary construction facilities, and.

(v) Installation of campsites, offices, workshops, storage.

The construction stage of the proposed Karibib Project will cover all the activities associated with the proposed Karibib Project mine supporting infrastructures and mine workings as outlined in Table 3.3. The ESMP makes provisions for management of a wider array of activities that will be associated with the construction activities.

Table 3.4 outlines the ESMP framework for both the preconstruction and construction stages of the proposed Karibib Project development.

Table 3.3: Summary of the construction activities covering the proposed Karibib Project mine infrastructures and mine workings.

CONSTRUCTION	MINE SUPPORTING INFRASTRUCTURE	1. Transportation facilities, including access roads to the site and on-site roads
		2. Processing plant infrastructure including foundation and the entire structures
		3. Co-disposal Waste Management Area for tailing and waste rock
		4. Waste rock and ore stockpiles
		5. Water supply systems
		6. Onsite power infrastructure, including power distribution and metering systems
		7. Administration blocks and warehouses
		8. Fuel supply and storage facilities
		9. Workshop and equipment maintenance
		10. Chemicals and explosives storage facility
		11. Wastewater treatment systems
		12. Municipal solid waste storage / transfer facilities
		13. Storm water management around the plant, waste rock and tailings
		14. Testing the mining and processing facilities
	MINE WORKINGS	1. Excavation, drilling and blasting to create direct access to the ore body
		2. Actual pit excavation and stripping of the overburden to create access to the ore
		3. Ore production for test mining operations
		4. Test mining and commissioning

Table 3.4: ESMP mitigation measures for the preconstruction and construction stages.

ASPECT	IMPACT	MANAGEMENT ACTIONS	RESPONSIBILITY	TIMING
1) Management and Monitoring	• Social and Environmental Performance	• Ensure that all aspects related to the ESMP are implemented during the upgrade/construction and rehabilitation of access road(s). • Hold regular site meetings/inspections. Make provision in the minutes of the meetings for reporting on all aspects of the ESMP related to the upgrade/construction and rehabilitation of the access road(s). • Adhere to the regulations, rules, procedures, current and future land use of the surrounding area.	• Lepidico Chemicals Namibia (Pty) Ltd • Contractor	Throughout the Preconstruction and Construction Phases of the proposed Karibib Project
2) Consultation and Disclosure	• Social and Environmental Performance	• Maintain open and direct lines of communication between the Employer, ECO, Contractor and I&APs with regards to environmental matters. • Consult with project affected communities in a structured and culturally appropriate manner throughout the project process. Consultation should be "free" (*of external manipulation, interference or coercion, and intimidation*), "prior" (*timely disclosure of information*) and "informed" (*relevant, understandable and accessible information*). • Adequately incorporate project affected communities' concerns.		
3) Grievance Mechanism	• Social and Environmental Performance	• Implement a grievance mechanism for receiving and resolving any concerns and grievances related to the project's social and environmental performance throughout the project life cycle. • Inform the affected communities about the mechanism in the course of the community engagement process. it must be readily accessible to all segments of the affected communities. • Address concerns promptly and transparently and in a culturally appropriate manner.		
4) Training including awareness and inductions	• Social and Environmental Performance	• Train employees, contractors and Subcontractors in matters related to the project's social and environmental performance, Namibia's regulatory requirements • Ensure adequate environmental awareness training for all senior site personnel. • Give environmental induction presentations to all site personnel prior to work commencement.		

Table 3.4: *Cont.*

ASPECT	IMPACT	MANAGEMENT ACTIONS	RESPONSIBILITY	TIMING
5) Labour and Working Conditions	• Social and Environmental Performance	• Establish, maintain and improve the worker-management relationship. Base the employment relationship on equal opportunity and fair treatment and no discrimination to be allowed. • Comply with Namibia's labour and employment laws and prevent unacceptable forms of labour, i.e. harmful child and forced labour. • Promote safe and healthy working conditions and the protection and promotion of worker health. • Prepare a Human Resources Policy and document and communicate the Working Conditions and Terms of Employment. • Respect Collective Agreements and the right of workers to organize and bargain collectively. • Prepare a Retrenchment Plan. • Implement a Grievance Mechanism.	• Lepidico Chemicals Namibia (Pty) Ltd • Contractor	Throughout the Preconstruction and Construction Phases of the proposed Karibib Project
6) Occupational Health and Safety	• Social and Environmental Performance	• Prepare and submit an Emergency Preparedness and Response Plan. • Adhere to all Namibian Health and Safety Regulations under the Labour Act and Mines Safety Regulations. • Occupational Health and Safety Training to be provided to all employees. • Ensure that qualified first aid can be provided at all times. • Provide and ensure the active use of Personal Protective Equipment (PPE).		
7) Community Health and Safety	• Social and Environmental Performance	• Prevent communicable disease (e.g sexually transmitted diseases (STDs) such as HIV/AIDS transmission): provide awareness, surveillance and active screening and treatment of employees. prevent illness among employees in local communities (through health awareness and education initiatives). ensure ready access to medical treatment, confidentiality and appropriate care, particularly with respect to migrant workers. and promote immunization.		

Table 3.4: *Cont.*

ACTIVITY/PROCESS	ASPECT	IMPACT	MANAGEMENT ACTIONS	RESPONSIBILITY	TIMING
Community Health and Safety **(Cont.)**	• Unauthorized public access	• Community Safety	• Use gates on the access road(s) and the entire mine site must be fenced off. • Mine site should not be accessible to anyone from the public. • Notice or information boards relating public safety hazards and emergency contact details should be put up at the gate(s) and at the mine site. • Create a viewpoint area, possibly including an information centre, for the public/tourists as part of the early stages of the Closure Plan provisions.	• Lepidico Chemicals Namibia (Pty) Ltd • Contractor	Throughout the Preconstruction and Construction Phases of the proposed Karibib Project
	• Construction	• Change in land.	• Restrict construction activities to demarcated / disturbed areas. all other areas will be regarded as "no go" zones in order to minimize the impact on the surrounding land. • Adhere to the regulations, rules, procedures, current and future regional and local land use plans.		
8) Mine Infrastructures and Mine Workings layout planning	• Mine Infrastructures and Mine Workings Layout	• Visual	• Minimize the presence of secondary structures: minimize number of access roads, and bury intra-project power lines. • Adhere to the regulations, rules, procedures, current and future regional and local land use plans for the area.		
9) Mine Infrastructures and Mine Workings design specifications	• Mine Infrastructures and Mine Workings appearance	• Visual	• Structural height and colour must be kept uniform. • Mine infrastructures and mine workings installation must be painted with a non-reflective coating to avoid high reflections. • Avoid using graphics or lettering on the mine infrastructures and mine workings		
	• Construction Activities	• Disturbance of fauna and flora and habitat alteration	• The planning and design to ensure minimum impact to the environment. • No trees or natural vegetation may be removed from the ML area for the making of fires or sale. • No animal may be injured, fed, trapped, hunted or harmed in any way. • No off-road driving will be allowed. • No trespassing on adjoining properties is allowed and no livestock, game or vegetation are to be interfered with.		

Table 3.4: *Cont.*

ASPECT	IMPACT	MANAGEMENT ACTIONS	RESPONSIBILITY	TIMING
10) Construction facilities assumed to be a (tented) temporary facilities and other supporting infrastructure. Adhere to the regulations, rules, procedures, current and future land use plans of the local area.	• Disturbance of fauna and flora and habitat alteration	• The planning and design to ensure minimum impact to the environment. • No trees or natural vegetation may be removed for the making of fires. • No animal may be injured, fed, trapped, hunted or harmed in any way. • No off-road driving will be allowed • Speed limit of not more than 40 km / h. • No trespassing on adjoining properties is allowed and no livestock, game or vegetation are to be interfered with.	• Lepidico Chemicals Namibia (Pty) Ltd • Contractor	Throughout the Preconstruction and Construction Phases of the proposed Karibib Project
	• Pollution of biophysical environment (air, soil and water)	• No fires will be allowed, unless a specific area has been identified and set aside by the ER for the cooking of food. • Vehicle maintenance/servicing/washing not to be allowed anywhere on site/at the camp. • Portable toilets to be provided and used at the camp. • Sanitary wastewater to be released into a French drain system. • Use bio-degradable detergents on site. • Enforce proper waste (hazardous and non-hazardous) management practices (as per Waste Management Plan) – waste and litter to be disposed of in scavenger and weatherproof bins and the refuse to be collected by the contractor and disposed of an approved waste disposal site at least once a week or as may be required.		
	• Occupational Health and Safety	• No fires will be allowed, unless a specific area has been identified and set aside by the ER for the cooking of food. • Ensure that employees are trained in the use of appropriate firefighting equipment and ensure that such equipment is on hand at all times. • Comply with all electricity safety, generation and supply regulations. • Supply potable water for human consumption and other domestic uses. conduct chemical testing of water samples on a monthly basis (if applicable). • Make suitable arrangements, as far as practicable, for the maintenance of health, the prevention and overcoming of outbreaks of disease and of adequate first aid services. • Ensure that security arrangements are in place at all times.		

Table 3.4: *Cont.*

ASPECT	IMPACT	MANAGEMENT ACTIONS	RESPONSIBILITY	TIMING
11) Clearing of areas along existing internal access roads widening and grading /construction and always adhere to the regulations, rules, procedures, current and future land use plans of the local area.	• Disturbance of fauna and flora and habitat alteration	• Restrict activities to previously demarcated areas (borrow pits, haul and access roads (20 m from the centre line of the road), construction camp / supporting infrastructure, etc.). all other areas will be regarded as "no go" zones in order to minimize the impact on the surrounding land. • Minimize the removal of native plant species. no vegetation may be removed/damaged without direct instructions. • No off-road driving will be allowed. • No animal may be injured, fed, trapped, hunted or harmed in any way.	• Lepidico Chemicals Namibia (Pty) Ltd • Contractor	Throughout the Preconstruction and Construction Phases of the proposed Karibib Project
	• Soil erosion	• Sediment mobilization and transport: reduce or prevent soil erosion (schedule activities to avoid heavy rainfall / strong winds periods. contour and minimize length and steepness of slopes. mulching to stabilize exposed areas. re-vegetate areas promptly. and design channels and ditches for post-construction flow). • Road design: limit access road gradients to reduce run-off induced erosion. provide adequate road drainage based on road width, surface material, compaction and maintenance. • Structural (slope) stability: provide effective short-term measures for slope stabilization, sediment and subsidence control until long-term measures (during operations) can be implemented. provide adequate drainage systems to minimize and control infiltration.		
	• Possible loss of the seed bank in the topsoil	• The upper layer of soil (10-20 cm), where alluvial, to be stripped and stockpiled separately (1-2 m high piles to allow for proper aeration). Install drainage to protect the topsoil pile from (water) erosion and cover it to protect it from (wind) erosion.		
12) Construction material borrow pit siting.	• Visual, pollution (traffic, noise and air), and land use	• Consider, in addition to material quality and quantity, the visual impact, potential traffic, noise and air pollution, and the potential loss of arable land when borrow pits are sited. Adhere to the regulations, rules, procedures, current and future regional and local land use plans.		

Table 3.4: *Cont.*

ASPECT	IMPACT	MANAGEMENT ACTIONS	RESPONSIBILITY	TIMING
13) Borrow pit management	• Disturbance of fauna and flora and habitat alteration	• Limit the number of borrow pits as far as possible. • The progression of stripping and excavation to allow for rehabilitation once the areas have been fully utilized.	• Lepidico Chemicals Namibia (Pty) Ltd • Contractor	Throughout the Preconstruction and Construction Phases of the proposed Karibib Project
	• Possible loss of the seed bank in the topsoil	• The upper layer of soil (10-20 cm), where alluvial, to be stripped and stockpiled separately (1-2 m high piles to allow for proper aeration). Install drainage to protect the topsoil pile from (water) erosion and cover it to protect it from (wind) erosion.		
	• Occupational and Community Safety	• Cut slopes not to be steeper than 30 degrees. • No under-cutting of the sides to be allowed. • Undertake excavations in a safe manner and in compliance with the relevant safety regulations (Labour Act and Mine Safety Regulations).		
	• Social and Environmental Performance	• Cut slopes not to be steeper than 30 degrees. • Use excess rock spoil to fill borrow pits. material to be neatly shaped and no loose material to be left inside the borrow pits. • No waste is allowed to be dumped in borrow pits. • Evenly spread top soil over the entire area to allow for the re-growth of vegetation. • Replant previously removed native plant species in disturbed areas.		
14) Increased traffic, presence and movement of machinery, and the establishment of soil stockpiles.	• Air quality (dust or Particulate Matter (PM) pollution)	• Minimize the area in which the movement of construction machines will take place to reduce the effects of dust pollution / generation. • Minimize dust from material handling sources (e.g. conveyors and bins) by using covers and/or control equipment (e.g. water suppression). • Minimize dust from open area sources, including storage piles, by using control measures (install enclosures and covers, and increase the moisture content). • Avoid the excavation, handling and transport of erodible materials under high wind conditions or when a visible dust plume is present.		
15) Increased traffic/vehicle movement.	• Air quality (dust or Particulate Matter (PM) pollution)	• Maintain the road surface to preserve surface characteristics (e.g. texture and roughness). • Use dust control/suppression methods, such as applying water or non-toxic chemicals to minimize dust (oil and oil by-products is not a recommended measure to control road dust).		

Table 3.4: *Cont.*

ASPECT	IMPACT	MANAGEMENT ACTIONS	RESPONSIBLE PERSON(S)	RESPONSIBILITY	TIMING
16) All mine Infrastructure construction	• Increased traffic/vehicle movement	• Air quality (dust or Particulate Matter (PM) pollution)	• Maintain the road surface to preserve surface characteristics (e.g. texture and roughness). • Use dust control/suppression methods, such as applying water or non-toxic chemicals to minimize dust (oil and oil by-products is not a recommended measure to control road dust).	• Lepidico Chemicals Namibia (Pty) Ltd • Contractor	Throughout the Preconstruction and Construction Phases of the proposed Karibib Project
	• Increased traffic, presence and movement of machinery (exhaust from diesel engines)	• Air quality & Occupational and Community Health and Safety	• Fleet owners/operators to implement manufacturer recommended engine maintenance programs (to control vehicle emissions: Carbon Monoxide (CO), Nitrogen Oxide (NO_x), Sulphur Dioxide (SO_2), Particulate Matter (PM) and Volatile Organic Compounds (VOCs)).		
	• Presence of machinery, construction workers, infrastructure and associated equipment	• Visual and noise	• Avoid critical habitats (for site transmission and distribution rights of way, lines, towers and substations) through using existing utility and transport corridors (transmission and distribution) where possible.		
	• Increased traffic, movement of machinery	• Occupational and Community Safety	• Adopt best transport safety practices by implementing the following measures: emphasize safety aspects among drivers. improve driving skills and require licensing of drivers. adopt limits for trip duration. avoid dangerous routes and times of day. and use speed control devices. • Regularly maintain vehicles and use manufacturer approved parts. • Use locally sourced materials (where possible) to minimize transport distances. • Employ safe traffic control measures, including the use of traffic and safety warning signs and flag persons to warn of dangerous conditions.		
	• Mine Infrastructures and Mine Workings foundations	• Occupational Safety	• Ensure that all excavations are properly performed and in accordance with Occupational, Health and Safety (OH&S) regulations. • Ensure that the handling of concrete follow health and safety precautions (as per Material Safety Data Sheets (MSDS)).		

Table 3.4: *Cont.*

ASPECT	IMPACT	MANAGEMENT ACTIONS	RESPONSIBILITY	TIMING
17) Hazardous materials management.	• Social and Environmental Performance	• Establish hazardous materials management priorities (based on hazard analysis of risky operations based on Material Safety Data Sheets (MSDS). • Avoid, or minimize the use of hazardous materials. • Prevent uncontrolled releases of hazardous materials to the environment or uncontrolled reactions that may result in fire or explosion. • Make us of engineering controls (containment, automatic alarms and shut-off systems). implement management controls (procedures, inspections and training, communication and drills) to address residual risks not prevented or controlled through engineering controls.	• Lepidico Chemicals Namibia (Pty) Ltd • Contractor	Throughout the Preconstruction and Construction Phases of the proposed Karibib Project
18) Hazardous materials management	• Pollution of biophysical environment (soil and water)	• Implement prevention and control measures for the use, handling and storage of hazardous materials: ○ Materials transfer: regularly inspect, maintain and repair fittings/pipes/hoses. make use of drip trays/other drip containment measures at connection/possible overflow points. ○ Overfill protection: use trained filling operators. install gauges on tanks to measure the volume inside. make use of dripless hose connections (vehicle tanks) and fixed connections (storage tanks). use a catch basin/drip tray around the fill pipe to collect spills. ○ Reaction, fire, and explosion prevention: hazardous materials to be stored in marked containers and separate (from non-hazardous materials). incompatible hazardous materials (acids, bases, flammables, oxidizers, reactive chemicals) to be stored in separate areas and with containment facilities separating material storage. smoking or working with open flames not to be permitted in the presence of these substances. limit access to hazardous waste storage areas and clearly label and demarcate the area. conduct regular inspections of the areas and document the findings. prepare and implement spill response and emergency plans. train employees in the use of appropriate firefighting equipment and ensure that such equipment is on hand at all times.		

Table 3.4: *Cont.*

ASPECT	IMPACT	MANAGEMENT ACTIONS	RESPONSIBILITY	TIMING
Hazardous materials management **(*Cont.)***	•	○ Secondary containment: use bunding (made of impervious, chemically resistant material) that can contain the larger of 110% of the largest tank or 25% of the combined tank volumes for above-ground tanks with a total storage volume equal or greater than 1,000 liters. • Train workers on the correct transfer and handling of fuels and chemicals and the response to spills. • Immediately report and clean up any accidental hydrocarbon spill: Spill-Sorb, Drizzat Pads, Enretech Powder or Peat Moss can be used to clean up small spills. in case of larger spills, the spill together with the polluted soil should be removed and disposed of at e.g. a biological remediation site.	• Lepidico Chemicals Namibia (Pty) Ltd • Contractor	Throughout the Preconstruction and Construction Phases of the proposed Karibib Project
19) Hazardous materials management.	• Occupational Health and Safety	• Implement hazard communication and training programs (including information on Material Safety Data Sheets (MSDS)) to make employees aware of workplace chemical hazards and how to respond to these. • Provide and ensure the active use of Personal Protective Equipment (PPE).		
20) Waste management: solid.	• Air quality	• Avoid the open burning of waste (whether hazardous, or non-hazardous).		
21) Waste management: non-hazardous and hazardous.	• Pollution of biophysical environment	• Prepare and submit a Waste Management Plan before construction commences. The generation of waste should be avoided or minimized as far as practicable. where it cannot be avoided, but has been minimized, waste should be recovered and reused. where waste cannot be recovered/reused, it should be treated, destroyed and disposed of in an environmentally sound manner. • Institute and maintain good housekeeping and operating practices. littering is not allowed. • Non-hazardous and hazardous waste to be collected and stored separately: • Hazardous waste: recycle petroleum (fuels and lubricants) waste products and collect and recycle batteries and print cartridges. The remainder to be transported to a recognized hazardous waste disposal site, with prior permission from the operator / owner.		

Table 3.4: *Cont.*

ASPECT	IMPACT	MANAGEMENT ACTIONS	RESPONSIBILITY	TIMING
22) Waste management: sanitary.	• Pollution of biophysical environment	• Portable toilets (1 toilet per 30 employees. preferred 1:15) to be provided. contents to be collected by an approved contractor and disposed of at an approved sewage site. Adhere to the regulations, rules, procedures, current and future regional and local land use plans.	• Lepidico Chemicals Namibia (Pty) Ltd • Contractor	Throughout the Preconstruction and Construction Phases of the proposed Karibib Project
23) Waste water management - waste water treatment.	• Pollution of biophysical environment	• Ensure that the discharge of process wastewater and/or sanitary wastewater and/or wastewater from utility operations and/or storm water to land conform to the regulatory requirements. Adhere to the regulations, rules, procedures, current and future regional and local land use plans.		
24) Waste water management - storm water management	• Soil erosion	• Regular inspection and maintenance of permanent erosion and runoff control features.		
25) Rehabilitation.	• Social and Environmental Performance	• Remove all equipment, waste, temporary structures, etc. from the construction facilities and work sites. • Reshape all disturbed areas (including stockpiles, borrow pits, and temporary detours and turnouts) to their original contours. • Cover disturbed areas with previously collected topsoil and spread evenly. • Manually rip disturbed areas, where compaction has taken place, and cover the areas with previously collected topsoil. • Replant any previously removed native plant species in disturbed areas. • Adhere to the regulations, rules, procedures, current and future regional and local use plans.		

Table 3.4: *Cont.*

ASPECT	IMPACT	MANAGEMENT ACTIONS	RESPONSIBLE PERSON(S)	RESPONSIBILITY	TIMING
26) Onsite power transmission and distribution	• Above Ground and Underground cables to transformer station. transmission lines)	• Habitat alteration & Occupational and Community Health	• Restrict excavation activities to previously demarcated areas. all other areas will be regarded as "no go" zones in order to minimize the impact on the surrounding land. • Ensure that all excavations are properly performed and in accordance with Occupational, Health and Safety (OH&S) regulations. • Restrict trench excavation to a pace that matches cable installation and backfill. No more than 300 m of open trench to exist at any time.	• Lepidico Chemicals Namibia (Pty) Ltd • Contractor	Throughout the Preconstruction and Construction Phases of the proposed Karibib Project
27) Onsite power transmission and distribution	• Habitat alteration	• Bird and bat collisions and electrocutions	• Align transmission corridors to avoid critical habitats. • Maintain 1.5 m spacing between, or cover energized components and grounded hardware. • Consider the installation of underground transmission and distribution lines (sensitive areas). • Install visibility enhancement object (marker balls, bird deterrents, or diverters).		
28) Onsite power transmission and distribution	• Electric and Magnetic Fields (EMF)	• Occupational and Community Health	• Ensure that average and peak exposure levels remain below the reference levels developed by the Commission of Non-Ionizing Radiation Protection (ICNIRP). • Reduce the EMF (from power lines, substations, or transformers) by applying engineering techniques (if levels are expected or confirmed above the recommended levels): shielding with specific metal alloys. burying transmission lines. increasing the height of the transmission towers. or modifications to size, spacing and configuration of conductors.		
29) Onsite power transmission and distribution	• Hazardous materials management	• Pollution of biophysical environment (soil and water)	• Minimize the use of SF6 (greenhouse gas). • The use of PCBs has largely been discontinued (see *IFC EHS Guidelines for Electric Power Transmission and Distribution* for the management of PCBs should it be used). • All activities, Hazardous materials management. • Wood preservatives? Needed?		

3.4 Operational ESMP

Once the construction of the proposed Karibib Project mine infrastructures and mine workings and mine testing has been completed, the development process will move into the operational phase in order to produce the minerals concentrates. Lepidico Chemicals Namibia (Pty) Ltd will be responsible for fulfilling the requirements in the ESIA and this ESMP for the operational stage of the proposed mine.

A Project / Site / Health Safety and Environmental (HSE) Manager / Engineer shall be appointed by Lepidico Chemicals Namibia (Pty) Ltd to oversee all the site operation as well as management of all the mine operational activities summarised as follows:

(i) Mining operations (actual mining operations including excavation, drilling, blasting as maybe required).

(ii) Transportation of the mined materials from pit to the processing plant for sorting, two (2) stage crushing, screening and stockpile of concentrate.

(iii) Transportation and storage of concentrate to be exported through the Port of Walvis Bay to The Chemical Conversion Plant in Abu Dhabi.

(iv) Management and disposal of the co-disposal facility comprising tailings and waste rock materials.

(v) Management of industrial and domestic waste water.

(vi) Storage and management of hazardous materials.

(vii) Ongoing exploration support, and.

(viii) Ongoing rehabilitation and maintenance.

Table 3.5 outlines the ESMPs for the operational stage of the proposed Karibib Project. Adherence to the regulations, rules, procedures, current and future regional and local land use plans shall be observed at all time by the operational staff including consultants, contractors and subcontractors.

Table 3.5: ESMP for the operation phase

ACTIVITY/PROCESS	ASPECT	IMPACT	MANAGEMENT ACTIONS	RESPONSIBILITY	TIMING
1) All activities	• Management and Monitoring	• Social and Environmental Performance	• Ensure that all aspects related to the ESMP are implemented during the operations phase. • Adhere to the regulations, rules, and procedures as well as current and future regional and local and use plans.	• Lepidico Chemicals Namibia (Pty) Ltd • Contractor	Ongoing throughout the Operational Phase
2) All activities	• Consultation and Disclosure	• Social and Environmental Performance	• Consult with project affected communities in a structured and culturally appropriate manner throughout the operations phase. Consultation should be "free" (*of external manipulation, interference or coercion, and intimidation*), "prior" (*timely disclosure of information*) and "informed" (*relevant, understandable and accessible information*). • Adequately incorporate project affected communities' concerns.		
3) All activities	• Grievance Mechanism (EP 6)	• Social and Environmental Performance	• Ensure a mechanism for receiving and resolving any concerns and grievances related to the project's social and environmental performance during the operations phase. • Address concerns promptly and transparently and in a culturally appropriate manner.		
4) All activities	• Training including awareness and inductions	• Social and Environmental Performance	• Train employees and contractors in matters related to the project's social and environmental performance, Namibia's regulatory requirements, and the requirements of the ESMP Performance Standards. • Ensure adequate environmental awareness training for all personnel. • Give environmental induction presentations to all new personnel prior to work commencement.		
5) All activities	• Labour and Working Conditions	• Social and Environmental Performance	• Establish, maintain and improve the worker-management relationship. Base the employment relationship on equal opportunity and fair treatment and no discrimination to be allowed. • Comply with Namibia's labour and employment laws and prevent unacceptable forms of labour, i.e. harmful child and forced labour. • Promote safe and healthy working conditions and the protection and promotion of worker health. • Document and communicate the Working Conditions and Terms of Employment. • Respect Collective Agreements and the right of workers to organize and bargain collectively.		

Table 3.5: *Cont.*

ACTIVITY/PROCESS	ASPECT	IMPACT	MANAGEMENT ACTIONS	RESPONSIBILITY	TIMING
6) All activities	• Employment and procurement opportunities	• Socio-economic	• Ensure local recruitment (of registered contractors or qualified and certified personnel, registered and certified with the appropriate statutory authorities and procurement to maximize benefit to region.	• Lepidico Chemicals Namibia (Pty) Ltd • Contractor	Ongoing throughout the Operational Phase
7) All activities	• Occupational Health and Safety	• Social and Environmental Performance	• Adhere to all Namibian Health and Safety Regulations as prescribed in the Labour Act and Mines Safety Policy / Regulations. • Occupational Health and Safety Training to be provided to all employees. • Ensure that qualified first aid can be provided at all times. • Provide and ensure the active use of Personal Protective Equipment (PPE).		
8) All activities	• Community Health and Safety	• Social and Environmental Performance	• Prevent communicable disease (e.g. sexually transmitted diseases (STDs) such as HIV/AIDS transmission): provide surveillance and active screening and treatment of employees. prevent illness among employees in local communities (through health awareness and education initiatives). ensure ready access to medical treatment, confidentiality and appropriate care, particularly with respect to migrant workers. and promote immunization.		
9) All activities	• Unauthorized public access	• Community Safety	• Use gates on the access road(s) and the entire site must be fenced off. • Mine site should not be accessible to anyone from the public. • Notice or information boards relating public safety hazards and emergency contact details should be put up at the gate(s) and at the mine site. • Create a viewpoint area, possibly including an information centre, for the public/tourists as part of the ongoing rehabilitation for mine closure and aftercare land use options as possible tourism product in the general area.		
10) All activities	• Increased traffic/vehicle movement	• Air quality (dust or Particulate Matter (PM) pollution)	• Maintain the road surface to preserve surface characteristics (e.g. texture and roughness). • Use dust control/suppression methods, such as applying water or non-toxic chemicals to minimize dust (oil and oil by-products is not a recommended measure to control road dust).		

Table 3.5: *Cont.*

ACTIVITY/PROCESS	ASPECT	IMPACT	MANAGEMENT ACTIONS	RESPONSIBILITY	TIMING
11) All activities	• Increased traffic/vehicle movement (exhaust from diesel engines)	• Air quality & Occupational and Community Health and Safety	• Fleet owners/operators to implement manufacturer recommended engine maintenance programs (to control vehicle emissions: Carbon Monoxide (CO), Nitrogen Oxide (NO_x), Sulphur Dioxide (SO_2), Particulate Matter (PM) and Volatile Organic Compounds (VOCs)).	• Lepidico Chemicals Namibia (Pty) Ltd • Contractor	Ongoing throughout the Operational Phase
12) All activities	• Increased traffic/vehicle movement	• Occupational and Community Safety	• Adopt best transport safety practices by implementing the following measures: emphasize safety aspects among drivers. improve driving skills and require licensing of drivers. adopt limits for trip duration. avoid dangerous routes and times of day. and use speed control devices. • Regularly maintain vehicles and use manufacturer approved parts. • Use locally sourced materials (where possible) to minimize transport distances. • Employ safe traffic control measures, including the use of traffic and safety warning signs and flag persons to warn of dangerous conditions.		
13) All activities	• Storm water management	• Attraction of species (birds and bats) to the area due to open water and subsequent injury, disturbance, or mortality of species	• Implement appropriate storm water management measures so as to avoid the presence of open water in the area. • Storm water around the mine site shall not be discharged into the Ephemeral Rivers / any public stream		

Table 3.5: *Cont.*

ACTIVITY/PROCESS	ASPECT	IMPACT	MANAGEMENT ACTIONS	RESPONSIBILITY	TIMING
14) Mine Operations	• Mine Operations components	• Species injury, disturbance (and potential alteration of behaviour), or mortality	• Implement monitoring programmes to study the potential impact(s) of the mine site operations on birds and bats.	• Lepidico Chemicals Namibia (Pty) Ltd • Contractor	Ongoing throughout the Operational Phase
	• Hazardous waste management	• Pollution of biophysical environment (soil and water)	• Mine site to be equipped with oil absorption and collection systems.		
15) General mine operational maintenance	• Cleaning and maintenance of mine site	• Resource use / depletion of natural resources	• Ensure all water is recycled. Ensure there are no leaks from all taps, pipes and fittings.		
	• Periodic painting of mine structures	• Pollution of biophysical environment (soil and water)	• Conform to ISO 12944:1998 Paints and varnishes - Corrosion protection of steel structures by protective paint systems- Part 4: Types of surface and surface preparation.		
16) Power transmission and distribution	• Electric and Magnetic Fields (EMF)	• Occupational and Community Health	• Ensure that average and peak exposure levels remain below the reference levels developed by the Commission of Non-Ionizing Radiation Protection (ICNIRP). • Reduce the EMF (from power lines, substations, or transformers) by applying engineering techniques (if levels are expected or confirmed above the recommended levels): shielding with specific metal alloys. burying transmission lines. increasing the height of the transmission towers. or modifications to size, spacing and configuration of conductors.		
17) Power transmission and distribution	• Hazardous materials management (insulating oils / gases (Polychlorinated Biphenyls (PCB) and sulphur hexafluoride (SF6)) and fuels)	• Pollution of biophysical environment (soil and water)	• Minimize the use of Greenhouse gas. • The use of Polychlorinated Biphenyls (PCBs) has largely been discontinued (see International Finance Corporation (*IFC) Environment, Health and Safety (EHS) Guidelines for Electric Power Transmission and Distribution* for the management of PCBs should it be used). • All activities, Hazardous materials management. • Wood preservatives? Needed?		

Table 3.5: *Cont.*

ACTIVITY/PROCESS	ASPECT	IMPACT	MANAGEMENT ACTIONS	RESPONSIBILITY	TIMING
18) Power transmission and distribution	• Live power lines	• Occupational Health and Safety	• Allow only trained/certified employees to install, maintain, and repair electrical equipment. • Deactivate and properly ground live power distribution lines before work is conducted on, or close to, distribution lines. • Ensure that live-wire work is conducted by qualified workers and in accordance to the specific safety and insulation standards. • Do not approach an exposed energized or conductive part (even if the worker is trained) unless: the person is properly insulated from the energized part (e.g. gloves) and *vice versa*. the worker is properly isolated and insulated from any other conductive part (live-line work). • Implement a Health and Safety Plan, detailing specific training, safety measures, personal safety devices and other precautions, where maintenance and operation is required within minimum setback distances	• Lepidico Chemicals Namibia (Pty) Ltd • Contractor	Ongoing throughout the Operational Phase
19) Power transmission and distribution	• Working at heights on poles/structures	• Occupational Health and Safety	• See General mine infrastructures and mine workings maintenance, working at heights.		
20) Power transmission and distribution	• EMF	• Occupational Health and Safety	• Prepare and implement an EMF Safety Program containing information on: potential exposure levels in the workplace and the use of personal monitors. training of workers to identify EMF levels and hazards. the identification and establishment of safety zones (areas acceptable for public exposure vs. those with expected elevated EMF levels and that only properly trained workers may access). action plans dealing with potential or confirmed exposure of levels that exceed those developed by the ICNIRP and Institute of Electrical and Electronics Engineers (IEEE).		
21) Power transmission and distribution	• Electrocution	• Community Health and Safety	• Use signs, barriers, and education to prevent public contact with potentially dangerous equipment. • Ground conducting objects installed near power lines.		

Table 3.5: *Cont.*

ACTIVITY/PROCESS	ASPECT	IMPACT	MANAGEMENT ACTIONS	RESPONSIBILITY	TIMING
22) All activities	• Water Management	• Resource use / depletion of natural resources	• Implement a water conservation program, promoting the continuous reduction in water consumption and achieving savings in water pumping, treatment and disposal costs, commensurate with the magnitude and cost of water use.	• Lepidico Chemicals Namibia (Pty) Ltd • Contractor	Ongoing throughout the Operational Phase
23) All activities	• Hazardous materials management	• Pollution of biophysical environment (soil and water)	• Implement prevention and control measures for the use, handling and storage of hazardous materials. • Train workers on the correct transfer and handling of fuels and chemicals and the response to spills. • Immediately report and clean up any accidental hydrocarbon spill: Spill-Sorb, Drizzat Pads, Enretech Powder or Peat Moss can be used to clean up small spills. in case of larger spills, the spill together with the polluted soil should be removed and disposed of at e.g. a biological remediation site.		
		• Occupational Health and Safety	• Implement hazard communication and training programs (including information on Material Safety Data Sheets (MSDS)) to make employees aware of workplace chemical hazards and how to respond to these. • Provide and ensure the active use of Personal Protective Equipment (PPE).		
24) All activities	• Waste management: non-hazardous and hazardous	• Air quality	• Avoid the open burning of waste (whether hazardous, or non-hazardous).		
		• Pollution of biophysical environment	• As per Waste Management Plan. • Institute and maintain good housekeeping and operating practices. littering is not allowed. • Non-hazardous and hazardous waste to be collected and stored separately: • Non-hazardous waste to be transported to and disposed of at an approved waste disposal site. • Hazardous waste: recycle petroleum (fuels and lubricants) waste products and collect and recycle batteries and print cartridges. The remainder to be transported to a recognized hazardous waste disposal site, with prior permission from the site operator / owner.		
25) All activities	• Waste management: sanitary	• Pollution of biophysical environment	• Toilets and Shower Blocks to be provided on the site as part of the administration and supporting infrastructure. contents to be collected by an approved contractor and disposed of at an approved sewage site. Unless there will be a sewage plant?		
26) All activities	• Waste water management	• Pollution of biophysical environment	• Ensure that the discharge of process wastewater and/or sanitary wastewater and/or wastewater from utility operations and/or storm water to land conform to the regulatory requirements. • Discharge to any public stream is prohibited		

3.5 Closure, Decommissioning, Final Rehabilitation and Aftercare ESMP

In accordance with the provisions of the Minerals (Prospecting & Mining) Act, 1992, Act No. 33 of 1992, the Environmental Management Act, 2007, Act No. 7 of 2007, the Water Act, 1956, Act No. 54 of 1956, the Atmospheric Pollution Prevention Ordinance, 11 of 1976 and Labour Act, 1992, Act No. 6 of 1992, Lepidico Chemicals Namibia (Pty) Ltd has prepared draft rehabilitation and final mine closure and aftercare plan for the Karibib Project (Annex 1). The draft rehabilitation and final mine closure and aftercare plan for the Karibib Project will be reviewed prior to the implementation of the project and will continue to be reviewed annually throughout the proposed Project lifecycle.

The implementation of the Karibib Project closure will take place at the end of the production life. The objective of establishing financial provision as detailed in draft rehabilitation and final mine closure and aftercare plan is to ensure that adequate funds are available at the time of a premature or planned mine closure. The financial provision for closure should reflect the real costs, and needs to be sufficient to reduce the liabilities and residual risks to an acceptable level at mine closure.

In the event of a default (Company going into administration) the Government and stakeholders will thus have a set of costed detailed design works and will be able to issue a tender and pay for works via the Karibib Project Environmental Rehabilitation Fund or any other funding instrument that has been capitalised during the operational stage of the Karibib Project. This includes any outstanding rehabilitation at mine closure that has not been completed to the satisfaction of the regulators and to enable the formal relinquishment of the Mining License (ML).

The Karibib Project Mine Closure Plan Mine activities consist of following five (5) steps that shall be implemented in consultation with the key stakeholders (Annex 1):

(i) Progressive rehabilitation: This will be implemented from the outset of the Project.

(ii) Project closure: Once production stops permanently; the number of workers will be reduced and a small labour force will be retained to permanently shut down the mine.

(iii) Decommissioning: Will be undertaken by a small crew or contractors who will be responsible for decommissioning or taking apart the mining supporting infrastructure such as the processing facilities and equipment.

(iv) Final rehabilitation/Remediation/reclamation: The objective of reclamation will be to return the ML area to an acceptable standard of socioeconomic use, ensuring that any landforms and structures are stable, and any watercourses are of acceptable water quality, and.

(v) Post-closure and aftercare including monitoring: Monitoring programmes will be used to assess the effectiveness of the reclamation measures and to identify any corrective action that may be needed during the post closure and aftercare stage.

Lepidico Chemicals Namibia (Pty) Ltd is committed to minimising the impact of its operations on the local receiving environment covering physical, biological, socioeconomic environments and ecosystem functions, services, use and non-use values or passive uses. The Karibib Project Mine Closure Plan and the estimated final mine rehabilitation, closure and aftercare costs are based on a number of technical reports for the development of the Karibib Project prepared by various consultants.

Lepidico Chemicals Namibia (Pty) Ltd will provide for expenditures associated with Karibib Project final rehabilitation, closure and aftercare costs and will comply with statutory obligations and stipulated requirements of the Ministry of Mines and Energy, the Ministry of Environment, Forestry and Tourism (MEFT), the Ministry of Agriculture, Water and Land Reform (MAWLF) as well as international best practices such as the Equator Principles (EPs) 1-10.

Lepidico Chemicals Namibia (Pty) Ltd will make sure that the provision covers all the aspects of the envisaged environmental liabilities at mine closure.

The ongoing rehabilitation shall be undertaken during the operational phase of the mine and shall be funded from the annual ongoing operational budget.

The monitoring of the Karibib Project Mine Closure Plan shall be undertaken in order to measure the achievement of outcomes for both the ongoing rehabilitation and final mine closure and aftercare activities. Both the ongoing rehabilitation and final mine closure and aftercare monitoring activities shall cover air quality and dust emissions, fauna and flora recovery in ongoing and final rehabilitated areas and short and long-term stability of the engineered structures such as tailings and waste rock co-disposal Waste Management Area (WMA), excavated areas, drainage systems, sedimentation basin and surface and groundwater quality.

The implementation of ongoing rehabilitation activities while the mine is still operational is vital to the successful final mine closure, decommissioning, remediation/reclamation and post-closure and aftercare. The ongoing rehabilitation should involve the demolishing of redundant infrastructure and facilities, clean-up activities of waste and litter, removal of buried waste, landscaping (slope stability and erosion protection) and ecological restoration through landscape reshaping and re-vegetation works to be undertaken during the life of the Karibib Project as soon as practicable following the cessation of use of an area.

The following is the summary of the other key recommendations to be implemented by Lepidico Chemicals Namibia (Pty) Ltd for the successful implementation of this Karibib Project Mine Closure Plan shown in Annex 1:

1. Lepidico Chemicals Namibia (Pty) Ltd commits that each year the Company will review this Karibib Project Mine Closure Plan and costs and make annual contributions to the Karibib Project Environmental Rehabilitation Fund to provide for the final Karibib Project rehabilitation, closure and aftercare costs. It's important that an updated Karibib Project Mine Closure Plan containing more technical detail and higher cost-estimation accuracy than the current plan is prepared as part of the updated project feasibility during the operational stage of the Karibib Project as may be applicable.

2. All the drawings and designs of the Karibib Project closure supporting infrastructure such as sedimentation basin, Waste Management Area (WMA), concrete walls and pits shall be undertaken by a qualified engineer and once such drawings are available, they shall be included in the updated versions of this Karibib Project Mine Closure Plan, and.

3. Continuous monitoring of the following key areas during the Karibib Project preconstruction, construction, operation with ongoing rehabilitation and monitoring and final rehabilitation and decommissioning, closure and aftercare shall be undertaken around the mine site and ML areas:

    (a) The long-term stability of the surface excavations (pits, working faces, other evacuation and Waste Management Area (WMA).

    (b) Short and long-term water management.

    (c) Long-term impacts on surface and groundwater sources (water quality), and.

    (d) Fauna and flora recoveries and diversity.

The aftercare will cover the long-term stability and environmental sustainability maintenance of all the remaining supporting infrastructures such tailings dump, pits and waste rock. The following is summary of the activities that will be undertaken as part of the final closure and aftercare stages for the proposed Karibib Project (Annex 1):

(i) Implementation of sustainable socioeconomic plan.

(ii) Closure / secure the open pits.

(iii) Closure and secure the co-disposal Waste Management Area (WMA).

(iv) Backfill all excavated areas / sites except the pits.

(v) Closure of all storage sites (waste, rock, ore etc).

(vi) Decommissioning and removal of facilities. However, infrastructures such as water, power, buildings, roads, fences and others may remain for future use as may be agreed with the stakeholders such the local farmers, Erongo Regional Council or the Ministry of Agriculture, Water and Land Reforms.

(vii) Overall land reclamation around the ML area.

(viii) Restoration of internal roads, and.

(ix) Revegetation and aftercare as may be required.

This ESMP Report makes provisions for management of a wider array of activities that will be associated with the proposed mine closure and aftercare stages. Table 3.6 outlines the ESMP framework for the closure and aftercare stages of the proposed mine. Table 3.7 summarise key mine components to be addressed in the ongoing and final mine closure plan (Annex 1).

Table 3.6: ESMP for progressive rehabilitation, final closure and aftercare stages.

ACTIVITY/PROCESS	ASPECT	IMPACT	MANAGEMENT ACTIONS	RESPONSIBILITY	TIMING
1) Mine closure and aftercare stages	• Ongoing and Final closure and aftercare stages	• Social and Environmental Performance & Visual	• Isolate (electrically) the mine site from the substation. • Disassemble the steel works and cut off at the top of the foundation concrete. rehabilitate the hardstand area. • Remove all above-ground substation infrastructure and re-use, recycle or dispose of it. • Conduct a site contamination assessment. remove any contaminated material and dispose of at an appropriate disposal facility. • Break up foundations at all the mine site and remove for disposal in the open pits. • Dig up below-ground substation infrastructure and remove. • Conduct a validation survey to ensure that all contaminated material at the substation has been removed. remove any contaminated material and dispose of at an appropriate disposal facility. • Rehabilitate access tracks not required for ongoing land use activities. • Remove all other equipment, waste, etc. from the area. • Reshape WMAs and all disturbed areas to the surrounding contours. • Secure mining pit areas through fencing and closing aces • Rehabilitate all excavated and disturbed areas • Manually rip disturbed areas, where compaction has taken place, and cover the areas with previously collected topsoil. • Replant any previously removed native plant species in disturbed areas.	• Lepidico Chemicals Namibia (Pty) Ltd • Contractor	• During Closure and Aftercare Stages
2) Closure	• Loss of jobs and income	• Socio-economic	• Implement a skills training programme during the operations phase.		• Ongoing throughout the Operational Phase

Table 3.7: Mine components to be addressed in the ongoing and final closure of the Karibib Project and detailed in the Mine Closure Plan shown in Annex 1.

Components	Aspects to be Addressed
Rubicon and Helikon Pit Areas	o Pits stability o Groundwater and rainwater management o Security and unauthorised access o Wildlife entrapment o Effects of drainage into and from the workings
Ore Processing Facilities	o Removal of buildings and foundations o Clean-up of workshops, fuel and reagent o Disposal of scrap and waste materials o Re-profiling and revegetation of site
Waste management areas	o Slope stability o Effects of leaching and seepage on surface and groundwater o Dust generation o Visual impact o Special considerations for some types of mines such as uranium mines
Water Management Facilities	o Restoration or removal of dams, reservoirs, settling ponds, culverts, pipelines, spillways or culverts which are no longer needed o Surface drainage of the site and discharge of drainage waters o Maintenance of water management facilities
Landfill / Waste Disposal Facilities	o Disposal or removal from site of hazardous wastes o Disposal and stability of treatment sludge o Removal of sewage treatment plant o Prevention of groundwater contamination o Prevention of illegal dumping o Security and unauthorised access
Infrastructure	o Removal of power and water supply o Removal of haul and access roads o Reuse of transportation and supply depots

4. ENVIRONMENTAL PERFORMANCE MONITORING

4.1 Review of Environmental Performance Monitoring Undertaken

Based on the results of the overall environmental performance monitoring undertaken for the period January 2017 - January 2020 under review, no diversions from the environmental commitments as outlined in the Environmental Policy of the Proponent, the 2017 EMP and the Environmental Clearance Certificate (ECC) have been observed or recorded. All the activities that have been undertaken for the period under review within the ML 204 have been executed with the highest Health, Safety and Environment (HSE) commitments. The summaries of the Environmental Performance monitoring undertaken are shown in Annex 2.

4.2 Environmental Performance Monitoring to be Undertaken

The environmental monitoring process of the ESMP performances for the proposed Karibib Project development as well as all the supporting infrastructures such as roads, powerline and water supply within the ML 204 is divided into two parts and these are:

(i) Monitoring activities and effects to be undertaken by the Environmental Control Officer (ECO), and.

(ii) Preparation of an Environmental Monitoring Report covering all activities related to this ESMP throughout the life cycle of the proposed mine to be undertaken by the Environmental Control Officer (ECO).

As part of the provisions of this ESMP and the conditions of the ECC that will be issued by the Office of the Environmental Commissioner (OEC) in the Ministry of Environment, Forestry and, continuous environmental monitoring and reporting shall be undertaken as provided in the regulations and this ESMP. The reporting process will form part of the ongoing environmental monitoring programme. Environmental monitoring programme is part of this ESMP performances assessment and will need to be compiled and submitted as determined by the regulator (OEC).

The process of undertaking appropriate monitoring as per specific topic and tracking performances against the objectives and documenting all environmental activities is part of internal and external auditing to be coordinated by the Environmental Control Officer (ECO) / External consultant / suitable qualified in-house resource person. Tables 4.1 – 4.9 outline the type of information that shall need to be recorded on a regular by the Environmental Control Officer (ECO) as part of the monitoring process of the activities and the effects.

The second part of the monitoring of the ESMP performance will require a report outlining all the activities related to effectiveness of the ESMP at the end of the proposed mine life to be undertaken by the Environmental Control Officer (ECO). The types of the data sets to be used in the preparation of such a report are outlined in Tables 4.1 - 4.9.

The objective will be to ensure that corrective actions are reviewed and steps are taken to ensure compliance for future ESIA and ESMP implementation. The report shall outline the status of the environment and any likely environmental liability after completion of the proposed project. The report shall be submitted to the OEC in the Ministry of Environment, Forestry and Tourism (MEFT) together with the final mine closure report.

Table 4.1: Monitoring of environmental performance implementation / environmental awareness training.

Mitigation	Compliance	Follow-up Action Required	By Whom	By When	Completed
Is there an Environmental awareness training programme?					
How many people have been given environmental awareness training?					
Is a copy of the ESMP on site?					
How effective is the awareness training? Do people understand the contents of the ESMP? Where are the weaknesses? Ask 3 people at random various questions about the ESMP.					

Table 4.2: Monitoring of environmental performance for the temporal and permanent structures.

Mitigation	Compliance	Follow-up Action Required	By Whom	By When	Completed
Are the temporal and permanent structures positioned to avoid sensitive zones, ephemeral river channels and potential sensitive sites?					
Has new infrastructure been created? If so, what, and how well planned / built with respect to environment?					
Have toilets and showers been provided? Where are they situated?					
Do receptacles for waste have scavenging animal proof lids?					
What litter is there – who is littering?					
Are there facilities for the disposal of oils / etc and how often is it removed to an approved disposal site?					
Is there evidence of oil / diesel spills inside or outside of bunded areas?					
What fuel source is being provided for cooking?					
Housekeeping					

Table 4.3: Environmental data collection.

Mitigation	Compliance	Follow-up Action Required	By Whom	By When	Completed
Are records being kept?					
Birds' mortality records as result of collision with the mine associated infrastructure?					
Birds nesting activities around the mine site?					
Noise level?					
Air Quality?					
Have archaeological sites been found / disturbed / described?					
Other key environmental data sets?					

Table 4.4: Health, Safety and Environment (HSE).

Mitigation	Compliance	Follow-up Action Required	By Whom	By When	Completed
Is there First Aid Kit containing anti-histamines etc?					
Are dangerous areas clearly marked off?					
Do vehicles appear to maintain the recommended speed limits?					
Do vehicles drive with headlights on along the gravel roads at all times?					

Table 4.5: Recruitment of labour.

Mitigation	Compliance	Follow-up Action Required	By Whom	By When	Completed
What labour source is used?					
How has the recruitment practice been done?					

Table 4.6: Management of the natural habitat and surficial materials management.

Mitigation	Compliance	Follow-up Action Required	By Whom	By When	Completed
Has there been any development done on or very close sensitive areas?					
Has anyone been caught with plants or animals in their possession?					
Has there been wilful or malicious damage to the environment?					
Has topsoil / seed bank layer been removed from demarcated development areas and appropriately stored?					

Table 4.7: Tracks and off-road driving.

Mitigation	Compliance	Follow-up Action Required	By Whom	By When	Completed
Are existing tracks used and maintained?					
What new tracks have been developed and are they planned?					
What evidence is there of off-road driving? Who appears to be responsible?					
Are corners being cut, what type of turning circle are there? Three-point turns vs. U turns?					
Have unnecessary tracks been rehabilitated and how well?					
Comments					

Table 4.8: Management of surface and groundwater.

Mitigation	Compliance	Follow-up Action Required	By Whom	By When	Completed
How is potable water supplied and how often? Position of tanks?					
Is water being wasted?					
Is there any leakage from pipes or taps?					
Were water samples taken regularly and measured?					

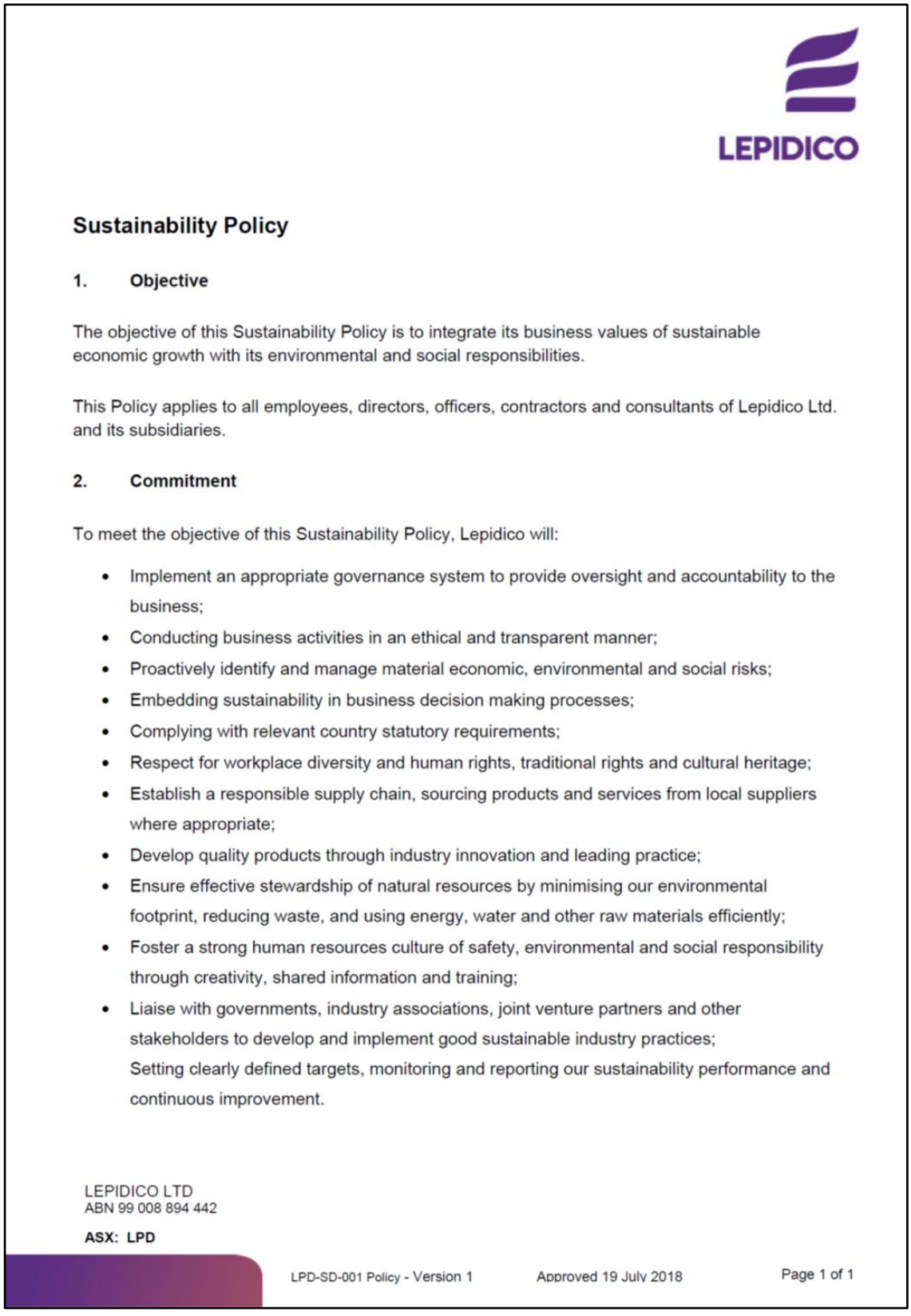
Table 4.9: Public relations.

Mitigation	Compliance	Follow-up Action Required	By Whom	By When	Completed
Have any complaints been made about the mine construction and or operational activities by the different stakeholders? If so, what, and how was the issue resolved?					

5. ENVIRONMENTAL AWARENESS

5.1 Company / Proponent Environmental Policy

Figure 5.1 is the Sustainability Policy of Lepidico Ltd, the parent company of the Proponent, Lepidico Chemicals Namibia (Pty) Ltd. The Policy will be implemented as part of this ESMP.



LEPIDICO

Sustainability Policy

1. Objective

The objective of this Sustainability Policy is to integrate its business values of sustainable economic growth with its environmental and social responsibilities.

This Policy applies to all employees, directors, officers, contractors and consultants of Lepidico Ltd. and its subsidiaries.

2. Commitment

To meet the objective of this Sustainability Policy, Lepidico will:

- Implement an appropriate governance system to provide oversight and accountability to the business;
- Conducting business activities in an ethical and transparent manner;
- Proactively identify and manage material economic, environmental and social risks;
- Embedding sustainability in business decision making processes;
- Complying with relevant country statutory requirements;
- Respect for workplace diversity and human rights, traditional rights and cultural heritage;
- Establish a responsible supply chain, sourcing products and services from local suppliers where appropriate;
- Develop quality products through industry innovation and leading practice;
- Ensure effective stewardship of natural resources by minimising our environmental footprint, reducing waste, and using energy, water and other raw materials efficiently;
- Foster a strong human resources culture of safety, environmental and social responsibility through creativity, shared information and training;
- Liaise with governments, industry associations, joint venture partners and other stakeholders to develop and implement good sustainable industry practices;
  Setting clearly defined targets, monitoring and reporting our sustainability performance and continuous improvement.

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Figure 5.1: Sustainability Policy - Lepidico Ltd (source: Lepidico, 2020).

5.2 Environmental Awareness Guidance

(i) The Environmental Rules apply to EVERYBODY. This includes all permanent, contract, or temporary workers as well as any other person who visits the mine site. Any person who visits the mine site will be required to adhere to the company Code of Conduct, which enshrines industry best environmental practice.

(ii) The ENVIRONMENT means the whole surroundings around us. The environment is made-up of the soil, water, air, plants and animals. and those characteristics of the soil, water, air, plant and animal life that influence human health and wellbeing.

(iii) If any member of the WORK FORCE does not understand, or does not know how to keep any of Environmental Rule or Procedure, that PERSON must seek advice from the ENVIRONMENTAL CONTROL OFFICER (ECO), SITE MANAGER or CONTRACTOR. The PERSON that does not understand must keep asking until she/he is able to keep to the all the Environmental Rules and Procedures.

(iv) Personnel who knowingly contravene the Environmental Rules and Procedures will be subject to the Company's disciplinary procedures.

5.3 Environmental Awareness Training Materials

5.3.1 Natural Environmental Management Guidance

- Never feed, tease or play with, hunt, kill, destroy or set devices to trap any wild animal (including birds, reptiles and mammals), livestock or pets. Do not bring any wild animal or pet to the mine site.
- Do not pick any plant or take any animal out of the mine site area. You will be prosecuted and asked to leave the project area.
- Never leave rubbish and food scraps or bones where it will attract animals, birds or insects. Rubbish must be thrown into the correct rubbish bins or bags provided.
- Protect the surface vegetation by not driving over it unnecessarily.
- Do not drive over, build upon, or camp on any sensitive habitats for plants and animals.
- Do not cut down any part of living trees / bushes for firewood, and.
- Do not destroy bird nest, dens, burrow pits, termite hills etc or any other natural objects in the area.

5.3.2 Vehicle Use and Access Guidance

- Never drive any vehicle without a valid licence for that particular vehicle and do not drive any vehicle that appears not to be road-worthy.
- Never drive any vehicle when under the influence of alcohol or drugs.
- DO NOT make any new roads or tracks without permission. Stay within demarcated areas.
- Avoid U-Turns and large turning circles. 3-point turns are encouraged. Do not ever drive on rocky slopes or vegetated dune areas.
- Stay on the road, do not make a second set of tracks and do not cut corners.
- DO NOT SPEED - keep to the designated speed limit on the tracks and site roads.

- ❖ No off-road driving is allowed. and
- ❖ Vehicles may only drive on demarcated roads.

5.3.3 Air Emission and Dust Reduction

- ❖ Manage the speed for all vehicles on the mine and community roads to reduce dust emissions.
- ❖ Stock piles should be covered with dust binding chemical to reduce fugitive emissions.
- ❖ Chemical binding substance can be applied to road surfaces to supress dust particle and reduce emission within the mine which will reduce fugitive emissions in the community.
- ❖ Recycling water can be sprayed on roads, stockpiles and conveyors to suppress dust thus reducing dust emissions.
- ❖ Continuous weather monitoring on site. and
- ❖ Employ loading practices for trucks by excavators to minimise dust generation.

5.3.4 Noise and Vibrations Emission Reduction

- ❖ Speed reduction can reduce noise associated with vehicles and trucks movements and ensure that vehicles are services regularly.
- ❖ Machinery that meets Namibian and international noise emissions will be used.
- ❖ Careful selection of equipment and insulation and sound enclosures around machinery can control noise.
- ❖ Regular and extensive monitoring of noise impact associated with blasting as well as other mining operations.
- ❖ Blasting times will be managed to minimise the impact of noise and vibration, and.
- ❖ Designing detonation sequence with delays between holes so that blast waves from individual holes do not occur simultaneously.

5.3.5 Preventing Pollution and Dangerous Working Conditions Guidance

- ❖ Never throw any hazardous substance such as fuel, oil, solvents, etc. into streams or onto the ground. Never allow any hazardous substance to soak into the soil.
- ❖ Immediately tell your Supervisor or Environmental Control Officer / Site Manager when you spill, or notice any hazardous substance being spilled anywhere in the mine.
- ❖ Report to your Supervisor or Environmental Control Officer / Site Manager when you notice any container, which may hold a hazardous substance, overflow, leak or drip.
- ❖ Immediately report to your Supervisor or Environmental Control Officer / Site Manager when you notice overflowing problems or unhygienic conditions at the ablution facilities.
- ❖ Vehicles, equipment and machinery, containers and other surfaces shall be washed at areas designated by the Contractor or Environmental Control Officer/ Site Manager, and.
- ❖ If you are not sure how to transport, use, store or dispose any hazardous substance - ASK your Supervisor or Environmental Control Officer / Site Manager for advice.

5.3.6 Saving Water Guidance

- ❖ Always use as little water as possible. Reduce, reuse and re-cycle water where possible.
- ❖ Report any dripping or leaking taps and pipes to your Supervisor or Environmental Control Officer or Site Manager, and.
- ❖ Never leave taps running. Close taps after you have finished using them.

5.3.7 Disposal of Waste Guidance

- ❖ Learn to know the difference between the two main types of waste, namely:
  - o General Waste. and
  - o Hazardous Waste.
- ❖ Learn how to identify the containers, bins, drums or bags for the different types of wastes. Never dispose of hazardous waste in the bins or skips intended for general waste or construction rubble.
- ❖ Never burn or bury any waste within mining license area.
- ❖ Never overfill any waste container, drum, bin or bag. Inform your Supervisor or the Environmental Control Officer / Site Manager if the containers, drums, bins or skips are nearly full.
- ❖ Never litter or throwaway any waste on the site, in the field or along any road. No illegal dumping.
- ❖ Littering is prohibited.

5.3.8 Religious, Cultural, Historical and Archaeological Objects Guidance

- ❖ If you find any suspected religious, cultural, historical or archeologically object or site around the mine, you must immediately notify your Supervisor or Environmental Control Officer **/** Site Manager, and.
- ❖ Never remove, destroy, interfere with or disturb any religious, cultural, historical or archaeological object or site around the mine site.

5.3.9 Dealing with Environmental Complaints Guidance

- ❖ If you have any complaint about dangerous working conditions or potential pollution to the environment, immediately report this to your Supervisor or the Environmental Control Officer **/** Site Manager, and.
- ❖ If any person complains to you about noise, lights, littering, pollution, or any other harmful or dangerous condition, immediately report this to your Supervisor or the Environmental Control Officer / the Site Manager.

5.4 Environmental Personnel Register

The Environmental Awareness Training will be undertaken as part of the Site General Induction and an Environmental Personnel Register will be signed by every person who receives or attends the Environmental Awareness Training or who has the training material explained to him or her or in possession of the training material.

6. CONCLUSION AND RECOMMENDATIONS

6.1 Summary of Conclusions

Under the EP-1, project classification, the Karibib Project is classified as a Category B Project.

Mitigation measures for both positive and negative impacts have been proposed and management strategies are provided in this ESMP for the following development stages:

(i) Preconstruction.

(ii) Construction.

(iii) Operation, ongoing exploration, monitoring and rehabilitation, and.

(iv) Decommissioning, closure and aftercare.

Based on the extent, duration, intensity and likely negative and positive impacts of the proposed Karibib Project development, this ESMP Report incorporates all the relevant mitigation measures with respect to likely impacts and recommendations to be implemented by the Proponent.

The implementation and monitoring activities of this ESMP covers all the stages of the proposed Karibib Project lifecycle and is inclusive of the preconstruction, construction, operation and ongoing rehabilitation and closure, final rehabilitation and aftercare stages.

Based on the findings of the ESIA and the recommendation of this ESMP with respect to the recommended mitigations measures, Table 6.1 summarises the impact assessment results before and after the implementation of the mitigation for selected key potential environmental issues likely to be associated with the proposed Karibib Project.

Table 6.1: Summary of the impact assessment results before and after the implementation of the mitigation for selected key potential environmental issues likely to be associated with the proposed Karibib Project.

ENVIRONMENTAL IMPACT OR ISSUE	SIGNIFICANCE RATING	
	BEFORE MITIGATION	AFTER MITIGATION
1. Impacts on Climate Change and air quality (PM_{10} & dust outfall including metals)	Low (-)	Very Low to negligible
2. Impacts on soil / habitats/ ecosystem	Medium (-)	Low
3. Impacts on flora / habitats/ ecosystem	Low (-)	Very Low to negligible
4. Impacts on invertebrates/ habitats/ ecosystem	Medium (-)	Very Low to negligible
5. Impacts on reptiles/ habitats/ ecosystem	Medium (-)	Very Low to negligible
6. Impacts on birds/ habitats/ ecosystem	Medium (-)	Very Low to negligible
7. Impacts on mammals/ habitats/ ecosystem	Medium (-)	Very Low to negligible
8. Impact on groundwater levels / resource	Low (-)	Low and localised
9. Impacts on groundwater quality (offices, ablutions, waste, refuelling)	Medium (-)	Low and localised
10. Impacts on groundwater quality (from waste management area drainage)	Medium (-)	Low and localised
11. Impacts on volumes of surface runoff	Low (-)	Very Low to negligible
12. Impacts on surface water quality	Medium (-)	Low and localised
13. Impacts of solid and liquid waste	Medium (-)	Low and localised
14. Electricity demand	Low (-)	Low
15. Impacts of power line	Low (-)	Low
16. Visual impacts and lighting	Low (-)	Very Low to negligible
17. Impacts of water demand	Medium (-)	Low
18. Impacts of water supply pipeline	Low (-)	Very Low to negligible
19. Road traffic and NamPort Walvis Bay Port Facility	Low (-)	Low localised
20. Mine rehabilitation, closure and aftercare	Medium (+)	High positive impact
21. Local positive socioeconomic including benefits of direct and indirect employment	High (+) Medium term	High long-term positive impact
22. Regional (Erongo region) and National (Namibia) overall positive socioeconomic benefits	High (+) Medium term	High long-term positive impact
23. Impacts related to other land users / conflict / coexistence	Medium (-)	Very low localised impact
24. Negative Socioeconomic and HIV/AIDS	Low (-)	Low
25. Labour and human rights	High (+)	High (+)
26. Occupational Health and Safety	Low (-)	Low and localised impact
27. Emergency Response Plan	Low (-)	Low and localised impact

6.2 Recommendations

It's hereby recommended that the Lepidico Chemicals Namibia (Pty) Ltd takes all the necessary steps to implement all the recommendations of this ESMP for the successful implementation and completion of the proposed Karibib Project activities from construction to final mine closure and aftercare stages.

The following are the recommended actions to be implemented by the Proponent (Lepidico Chemicals Namibia (Pty) Ltd) as a part of the management of the impacts through implementations of this ESMP Report and the Karibib Project Mine Closure Plan as detailed in Annex 1 of this ESIA Report:

(i) The Proponent will undertake to implement the conditions of the land lease agreement to be concluded with the owner of Farm Okongava 72, the Ministry of Agriculture, Water and Land Reform, for the portion of the farm required to support the proposed Karibib Project.

(ii) The Proponent will implement and adhere to all the provisions of this ESMP report.

(iii) Mitigation measures will be implemented as detailed in this ESMP report.

(iv) The Proponent will adhere to all the applicable national regulations and standards as well as Good International Industry Practices (GIIP) such as the EPs 1-10 guidelines framework.

(v) The Proponent will adopt the precautionary approach / principles in instances where baseline information, national or international guidelines or mitigation measures have not been provided or do not sufficiently address the site-specific project impact.

(vi) As part of the continuous key stakeholder consultation and engagement processes, a stakeholder register and grievance mechanism will be developed as shown in Tables 6.2 and 6.3. A grievance feedback mechanism will be created to receive, track and respond to questions and complaints from community members, individual or group affected or likely to be by the proposed Karibib Project operations (Tables 6.2 and 6.3).

(vii) Appoint an Environmental Control Officer to lead and further develop, implement and promote environmental culture through awareness raising of the workforce, contractors and sub-contractors in the field during the whole duration of the proposed project.

(viii) Provide with other support, human and financial resources, for the implementation of the proposed mitigations and effective environmental management during the planned mine project life cycle.

(ix) Develop an environmental induction and awareness programme for all the workforce, contractors and subcontractors.

(x) Service provider contracts will incorporate provisions for environmental and social management and liabilities.

(xi) Implement internal and external monitoring of the actions and management strategies developed during the project duration and a final Environmental Monitoring report to be prepared by the Environmental Control Officer and to be submitted to the regulators and to end the proposed mine project.

(xii) Develop and implement a monitoring programme that will fit into the overall company's Environmental Management Systems (EMS) as well as for any future ESIA related to the expansion of the current delineated resources or development of completely new mine site within the EPL area.

All the responsibilities to ensure that the recommendations are executed accordingly, rest with the Proponent (Lepidico Chemicals Namibia (Pty) Ltd). The Proponent shall provide all appropriate

resource requirements for the implementation of this ESMP as well as the Karibib Project Closure Plan as detailed in Annex 1 of this ESIA Report.

It is the responsibility of the Proponent to make sure that all members of the workforce including contractors and subcontractors are aware of this ESMP provisions and its objectives.

It is hereby recommended that the Proponent take all the necessary steps to implement all the recommendations of this ESMP for the successful execution of the preconstruction, construction, operational, decommissioning, closure and aftercare activities of the proposed Karibib Project within the ML 204.

Table 6.2: Sample of the Stakeholder Register.

No.	Name/ Organisation	Contact Details	Questions/Comments	Feedback/Response
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
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21.				
22.				
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24.				
25.				

Table 6.3: Sample of the Grievance Form.

Name of Commenter/Aggrieved			
Name of Organisation/Position			
Address			
Telephone/Fax			
Email Address			
Most Effective Means to Send a Response	Mail	Email	Phone
Date of Comment/Grievance			
Date Inputted			
Nature and Location of Comment/Grievance			
Received By			
Initial Response Details and Sent By:			
Date of Initial Response			
Resolved/Addressed By			
Nature of Resolution			
Date of Resolution			
Signed By: Community Liaison Officer (CLO)			

6. ANNEXES

Annex 1 – Draft Karibib Project Mine Closure Plan (KPCP) for ML 204